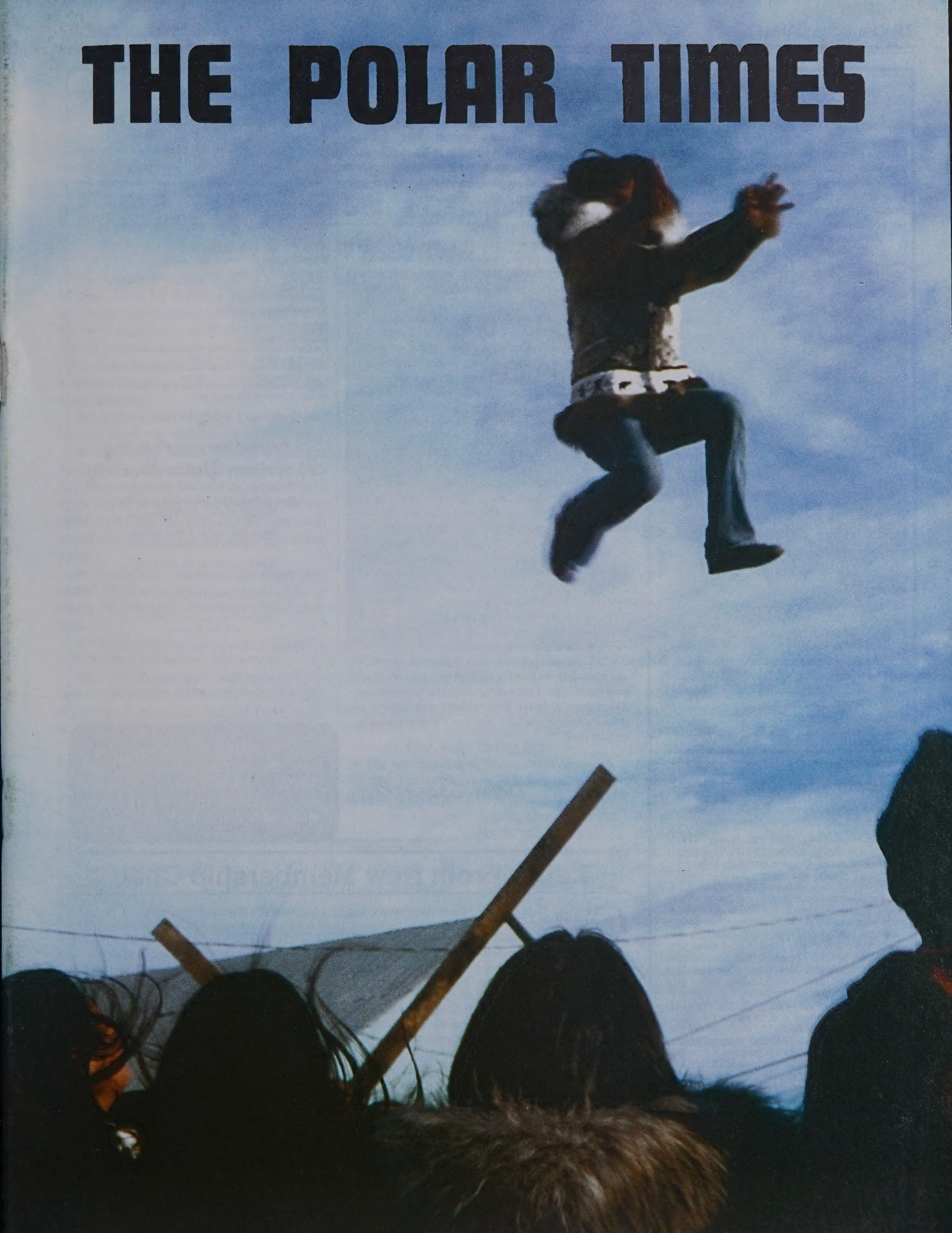
THE POLAR TIMES



CONTENT

The Bering Sea's Dependable Haul 3
Arctic Facing Serious Damage, Study Says 4
Climate Change Affecting Arctic Flora, Fauna ... 4
Alaska Drilling Supporters Get Key Posts 5
Routes Agreement on North Pole Flights 5
Story of Viking Colonies' Icy 'Pompeii' 6
Ancient Yarn Suggests Early Europeans 7
Norwegian Who Proved Vikings Beat Columbus Dies 7
Cetacean Seniors 8
New Whale Species 9
Seals Reported Safe From Starvation 9
Albatrosses in the Air 9
U.S. Presses Japan Not to Kill Whales 9
Whale Meat of Banned Species Sold In Japan 9
"Witness the Arctic" 10
UN: Arctic Ozone Has Stabilized 10
From Tiny Hum Came Big Bang 11
Canada Welcomes South Pole Pilots 11
High-Fat Diet Helped Antarctic Adventurers 11
'www.americanpolarsociety.org' Established 11
Centerfold: Fifty More Years Below Zero 12-13
OAE Association Invites Membership 14
Ice Probe Reveals Images Within Ice Streams 14
Cocoa Tin 'Souvenir' Returns To Ice 14
Tracking Rogue Giant Icebergs 15
"B.C." comic strip (by permission of Johnny Hart) 15
Matthew Henson Earns Overdue Honor 16
Barge Seaman Drifts Weeks in Bering Sea 16
Arctic Ice Thinning 16
A Tribute—VX-6 At It's Best 17
Ballooning for Cosmic Rays 18
Old Air Tells of Past Environments 19
Antarctic Ice Discovery Warms Debate 19
Melting Ice Sheet Shows Antarctic Erosion 19
Penguins in Trouble Worldwide 20
The Emperor's Waddle 21
Decline of the Emperor 21
The Slandered Penguin 21
The King's Doggie Bag 21
Obituaries 22
Coming Events 22
Membership Application Form 22
Book Reviews 22-23

About Your Annual Dues

The Board of Governors has set the dues structure for the year 2000 and after as follows:

ANNUAL DUES: Rate $15 (Foreign $17)
LIBRARY DUES: Rate $20 (Foreign $22)
ANNUAL CORPORATE: Rate $100
LIFE MEMBERSHIP: $250 (Foreign $270)

For ease of administration we ask for annual dues to be submitted at the end of each calendar year, and we include a remittance envelope with the Fall/Winter issue of the *Polar Times*.

Since many of you send in your dues several years in advance, we tag your contributions to our membership files in our computer. This tag prints out on your membership sticker that we place on the envelope for the *Polar Times*. If it reads "expires 12/31/00," then your membership contribution was due on January 1, 2001. If it reads "expired 12/31/99," then you are two years in arrears. If it reads "expires 12/31/01...02...03," you are paid in advance. Life memberships should have an emboldened "Life Member" tag above their names. We will honor all dues paid in advance at the current rate, but upon expiration the new rates apply.

Multiple year contributions are welcome as are donations. We are a tax exempt organization as defined by Sec 501(C)3 of the IRS Code. ❑

Secretary's Letter

In the Fall Winter 2000 issue of *The Polar Times* I announced that I was stepping down as Secretary of the *American Polar Society*. I had assumed too many of the jobs that we created over the years and once I took on the Polar Oral History Program, I had so much work, that nothing was being done correctly–worse, the situation was such that the *Society* could not function properly and growth was limited.

We placed advertisements in the preceding issue of The Polar Times for positions that we had designed to help the *Society* function properly. I was skeptical that we would get many takers, but happily was wrong–we were swamped with volunteers! It is my pleasure to briefly introduce them. Captain David Baker, Antarctic dog sled driver, has been our Treasurer for three years. Captain Lawson Brigham, PhD, icebreaker commander in the polar climes, has been your Honors Chairman for seven years. Dr. Charles R. Kremenak, of the icebreaker *Atka* is now your Membership Chairman. Captain Frank Stokes, who wintered over at Little America during IGY, will be the new Secretary of the American Polar Society. Captain Cliff Bekkedahl, of Arctic and Antarctic renown aboard the *Arneb,* is now the Editor-in-Chief of *The Polar Times*. Cliff will be assisted by Mr. Jeff Rubin, author of the Lonely Planet guidebook *Antarctica*, as Antarctic Editor and Dr. Dave Norton, Professor at the University of Alaska, will be the Arctic Editor. Production and Printing will continue under Charlotte Sinclaire who has held the position for nine years. Our Webmaster, who has wintered-over three times in Antarctica, is Mr. Juan Reyes. The foundation of *The Polar Times* rests on the shoulders of our membership who are too many to mention. The three leading contributors of polar news, however, have been Chief Billy-Ace Baker, Colonel Peter Barretta and Mr. Peter Anderson–we are delighted that they are continuing on as our chief news sources.

The last nine years has been wonderful, revealing and rewarding. As I said in the last issue, I am not dropping out of sight. I am hunting down old *Arcticans* and *Antarcticans* to record their personal contributions to polar exploration–perhaps, one day; I will be knocking on your door!

Sincerely

Brian Shoemaker

The Polar Times
Spring-Summer 2001, Vol. 2, No. 17

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are $15 a year ($17, foreign), and entitle members to receive ***The Polar Times*** twice a year. The American Polar Society is classified as a tax exempt organization under Sec 501(C)3 of the IRS Code. For more information about the American Polar Society, contact **Capt. FRANK STOKES, APS Secretary,** at 1.850.497.0759 or send email to *sto396@yahoo.com.*

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OUR COVER: ***An Inupiat hunter flies skyward during the annual Nalukataq Whaling Festival, Barrow, Alaska.*** **(Photo courtesy of Capt. Brian Shoemaker USN [Ret.])**

Letter From New Membership Chair

Greetings from the new Membership Center in Iowa City, Iowa. I'm Bob Kremenak, the long-ago dentist on the *USS Atka* for Deepfreeze II and III and the Dewline missions of '57 and '58. I've just volunteered to do the membership part of the job Brian Shoemaker did heroically for so long.

Keeping *The Polar Times* mailing list up to date has occupied my time thus far and, in looking at that list, I'm struck by what an interesting and exotic group we are. Most of our nearly 1,000 members live in the U.S., but addresses also range from Nairobi to Nagoya and from Stockholm to Sydney. About 50 major libraries subscribe. More of us live in California than any other state, but someone lives in nearly every state.

And, because we tend to be busy active types, a few forget to pay their dues. I sent reminders to those people in early June and already a gratifying flow of responses has come back. Another letter will go out in September to all of us whose dues expire on December 31, 2001.

A membership drive is next on the agenda. The grand goal is a bigger and better APS with membership doubling to 2,000 by the year 2004. You will be hearing more about this; keep your eye on the new website. In the meanwhile, please consider sending me names of any prospective members you think of. I will quickly mail them membership information. *Or,* if you buy them a 2002 gift membership for the year-end holidays, I'll send the recipient a specially designed APS commemorative gift card and a bonus Winter 2001 issue of *The Polar Times.* Better yet, spring for two years and we'll throw in one of the beautiful APS lapel pins.

My mailing address is American Polar Society, Membership Center, P.O. Box 464, Iowa City, IA 52242-0464. My e-mail address is kremenak@aol.com. Looking forward to hearing from you!

Sincerely,

Bob Kremenak

The Polar Times
American Polar Society • Spring-Summer 2001

The Bering Sea's Dependable Haul: Tragedy

Loss of a crew of 15 offers chilling reminder of fishing's toll

***The Washington Post*, KODIAK, Alaska, 13 May 2001, by William Booth**—Fishing boats sink with frightening frequency here in the most dangerous waters in the most dangerous profession in the nation. What is unusual about the *Arctic Rose* is that all 15 crew members aboard went down without uttering an audible cry.

No distress call! No May Day! Probably because there was no time.

In the Bering Sea, a fishing vessel can death-roll in a heartbeat. Strong ships built like battering rams become as unstable as a tippy canoe, as tons of ice overload the top decks, or the big nets foul, and they are swallowed in a single, horrible gulp by a rogue wave.

In April 2001, the *Arctic Rose* was consumed. All it left behind was an oil slick, an empty life raft, a dead skipper—and a mystery.

It was the deadliest single accident in the U.S. fishing fleet in half a century.

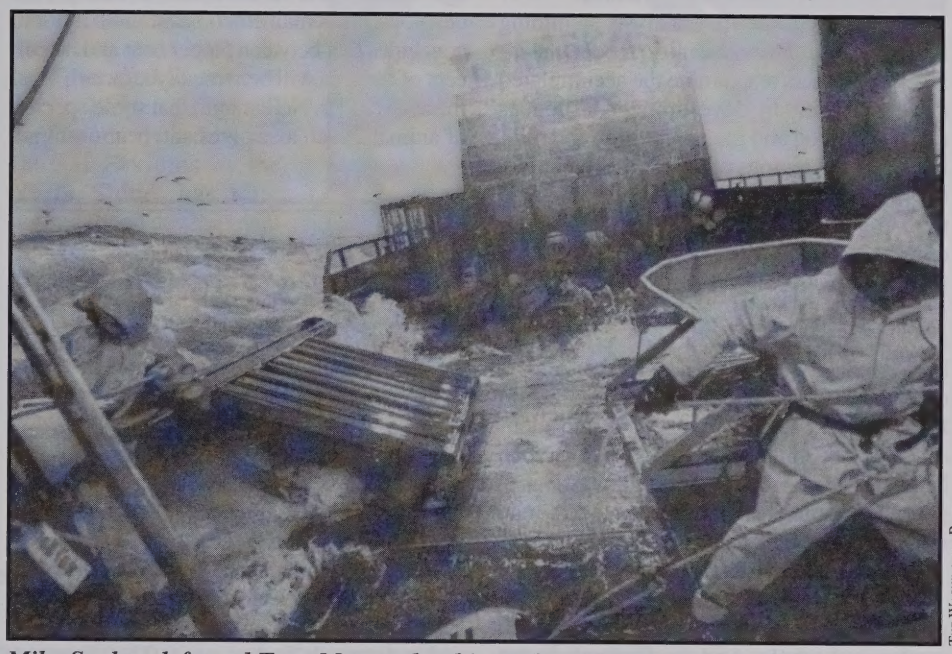
Yet while the loss of 15 fishermen on one boat is exceptional, the *Arctic Rose* is just one of dozens of boats that will slip beneath the ice-gray Alaskan waters this year.

The pursuit of salmon steaks, crab legs and fish sticks comes at a steep price. Commercial fishing remains the most dangerous occupation in America. A fisherman in Alaska is 16 times more likely to die than a police officer.

The annual accounting of the fishing industry in Alaska can read like a report from a battlefield: crew members lifted into helicopters, bleeding from amputations or suffering fractured skulls; boats lost or foundering due to engine failures, fire or grounding.

What makes fishing in Alaska so dangerous is the combination of almost incomprehensible conditions and extreme isolation. Gigantic storms pummel these waters, particularly in the winter and spring, and rescue can be hours and often days away.

The night the *Arctic Rose* went down, the 92-foot trawler was working an area known as the Zemchung Flats, a lonely piece of ocean some 235 miles northwest of a remote island called St. Paul, in the Bering Sea.



THE WASHINGTON POST

Mike Spokas, left, and Tony Monroe haul in crab pot buoys from the Bering Sea near Alaska's Durch Harbor.

All 15 crew members aboard the Arctic Rose *went down without uttering an audible cry.*

The weather that night was relatively calm. Scattered snow showers. Winds from the east at around 25 mph. Waves rolling across the fishing grounds at the height of a tall man.

"That's nice and calm on the Bering Sea," said Cmdr. Craig Gilbert, captain of the *Storis*, a 230-foot Coast Guard cutter that watches over the Alaska fishing fleet. "I've sailed here, and...this is by far the worst weather I've ever seen," Gilbert said. "Brutal. Unpredictable. Remote....It'll blow for four or five days at 80 knots [92 mph]. Up here, they don't call that a hurricane. They call it windy."

On April 1, the night before the *Arctic Rose* sank, the vessel communicated at around 10:30 p.m. with its sister ship, the *Alaskan Rose*, which was fishing the same waters.

Like most modern fishing boats, the bridge of the *Arctic Rose* was a mini-communications center, with VHF and single-sideband radios and satellite and cellular phones. Investigators suspect that whatever happened to the *Arctic Rose* was fast and catastrophic.

At 3:38 a.m. on April 2, an orbiting satellite relayed an automated distress call from the *Arctic Rose*. The distress call was relayed five minutes later to Coast Guard headquarters in Juneau.

Repeated attempts to hail the *Arctic Rose* failed, and so search-and-rescue operations began in Kodiak. A Coast Guard C-130 aircraft was airborne and en route in an hour and 25 minutes, but it would take five hours for the plane to reach the site.

While aloft, the C-130 reached the sister ship, the *Alaskan Rose*, which was only seven miles from the sunken vessel. The sister ship had heard nothing from the *Arctic Rose*.

In the morning, the *Alaskan Rose* found the debris field: the oil slick, the empty life raft, six empty survival suits afloat, and the skipper, who had gotten into his red survival suit but had not managed to zip it up completely.

(CONTINUED: "BERING SEA," P. 16)

Arctic Facing Serious Damage, UN Study Says

***Toronto Globe and Mail*, 13 June 2001, by Alanna Mitchell**—Up to 80 per cent of the planet's delicate Arctic region will be seriously damaged by the middle of this century if industrial development there does not slow down, says a ground-breaking new scientific report published yesterday in Finland by the UN Environment Programme.

The report is the first analysis stemming from a powerful new scientific model that allows researchers to examine the accumulated effects of human development—such as roads, dams, oil and gas exploration and mining—in large regions of the Earth. Over time, the model, GLOBIO, is expected to be able to map in great detail what industrial development has done to the whole planet, and to forecast effects.

Until now, when the environmental impacts of a development have been studied, they have been looked at literally road by road or dam by dam, rather than as an ecological whole over a large area. "It's been fragmented into thousands, if not millions, of reports," Christian Nellemann, an Arctic ecologist at the Norwegian Institute for Nature Research, said in an interview from Lillehammer yesterday.

Dr. Nellemann is the leader of the project.

This new United Nations model brings together these small individual reports into a synthesized whole. And the findings on the Arctic region, published yesterday at an international meeting of the Arctic Council countries in Rovaniemi, Finland, are devastating.

Dr. Nellemann's analysis looks at the rate of industrial development across the Arctic between 1940 and 1990 and at the effects on the whole ecosystem over that time.

Then the model assesses how much damage would occur in the Arctic if that rate of development remained constant until 2050. It concludes that between 50 per cent and 80 per cent of the area will be critically affected. That means, said Dr. Nellemann, that some species of animals, such as wolves and bears, will go into decline. Other scavenger species—such as crows and ravens—will do better.

Even if the rate of development were halved over the next few decades, about 40 per cent of the Arctic would be critically disturbed by mid-century....

And that will trigger what Dr. Nellemann calls a "chain reaction" throughout the Arctic system—including on indigenous peoples—and even much farther away. That is partly because so many species that live in the Arctic are migratory. When they are affected in the Arctic, that impact reverberates in other ecosystems the animals inhabit during other parts of the year.

Already, between 10 per cent and 15 per cent of the world's Arctic region is affected by industrial development. Even if the rate of development were halved over the next few decades, about 40 per cent of the Arctic would be critically disturbed by mid-century, the report says. Should it double, the damage would reach 90 per cent over the same span of time.

Far more industry is being planned for the area, including pushing roads and other transportation systems well into the Yamal Peninsula of Russia and the Arctic National Wildlife Refuge (ANWR) in Alaska.

Year-round shipping routes through Arctic waters are on the books. Along with them would likely come human settlements and other types of secondary development that would affect wildlife and vegetation, the GLOBIO report says.

The report does not take into account the effects of climate change in the Arctic, focusing instead on industrial development.

The Intergovernmental Panel on Climate Change, concluded in January that the Arctic is likely to experience dramatic warming and climate instability as it feels the effects of greenhouse gases emitted farther south. ❑ ***(cb Brian Shoemaker)***

Climate Change Affecting Arctic Flora and Fauna, Study Says

***NSF Custom News Service*, 11 June 2001, by Peter West**—The remoteness of one of the world's largest ecosystems has not made it immune from global environmental problems, according to a major new report on the state of Arctic biodiversity, funded in part by the National Science Foundation (NSF).

"Arctic Flora and Fauna: Status and Conservation" was released today in Finland by the Arctic Council's working group for the Conservation of Arctic Flora and Fauna (CAFF). The report includes contributions from more than 150 specialists and experts throughout the Arctic.

"Many scientists or groups of specialists have looked at parts of the Arctic or at different species, but until now no one has taken a comprehensive look at the state of the entire Arctic," said Sune Sohlberg of Sweden, who chairs the CAFF working group. "Thanks to this report, we now have a better idea of conservation needs around the circumpolar region."

At the local level, the report argues, there is clear evidence that several economically important species have been exploited, and habitat has been fragmented due to development activities. It adds that climate change is already having measurable effects on Arctic species, permafrost, and sea ice; alien invasive species are increasingly penetrating the region; and contaminants released thousands of kilometers away are appearing at high levels in human and wildlife communities.

The report also highlights the lack of critical information in many areas. Population figures for plants and animals may be uncertain, and the scientific understanding of the ways the Arctic ecosystem functions in changing environment is incomplete. Nevertheless, these population figures provide a baseline for later research and monitoring data.

The report was developed over a two-year period and funded in part by a $56,000 grant from NSF's division of environmental biology.

Based on the latest scientific information, the book-length report provides a clear understanding of the importance of the Earth's largest eco-region and its status in a rapidly changing world.

Henry Huntington, the lead U.S. researcher and chief writer on the editorial team, called it "more a starting point than a final report." He added, "finding and compiling data on species populations and other basic parameters was harder than we had expected. I hope the Arctic Council will build on our work, both through further research that takes a circumpolar perspective and through actions that respond to the threats identified in the report."

Following presentation of the report to the Arctic Council's senior arctic officials today, CAFF will develop specific recommendations for action, which are expected to be delivered to the Arctic Council's next ministerial meeting in fall 2002. ❑ ***(cb Brian Shoemaker)***

Alaska Drilling Supporters Get Key Interior Posts

***Reuters*, ANCHORAGE, Alaska, 17 June 2001, by Yereth Rosen**—The head of a group campaigning for oil development in the Arctic National Wildlife Refuge and an Alaska lawmaker who has promoted North Slope oil development were named to key Interior Department positions.

Interior Secretary Gale Norton said on Saturday she has appointed Cam Toohey as her special assistant for Alaska and state Sen. Drue Pearce as a senior adviser on Alaska issues.

Development backers hailed the appointments but environmentalists slammed them.

Since 1996, Toohey has been executive director of Arctic Power, an Anchorage-based lobbying group with the campaign for ANWR drilling as its sole purpose. He will be based in Anchorage, overseeing the Interior Department's Alaska operations.

Pearce, an Anchorage Republican who served two terms as president of the state Senate, will be based in Washington. Hers is a new position.

Norton said the Bush administration remains committed to promoting oil development in the Arctic refuge, despite opposition from environmentalists and the recent shift of power in the U.S. Senate to the Democrats, who generally oppose the drilling plans.

Oil from the refuge's coastal plain "needs to be considered in any debate" about a national energy policy, Norton said at a news conference in Anchorage.

"It's such a large resource that it cannot be ignored," she said. "Even at the low-end estimates we could get as much oil from the (coastal plain) area as we get from (Iraqi President) Saddam Hussein. It's a choice the American public has to make."

Development backers welcomed Norton's selections.

"These appointments are great for Alaska," Oliver Leavitt, chairman of the Barrow-based Arctic Slope Regional Corp., said in a prepared statement. Arctic Slope, a regional corporation owned by the Inupiat Eskimos of the North Slope, has long pushed for oil development in the Arctic refuge.

Environmentalists criticized the appointments.

"Today we've seen a hostile takeover of the Interior Department by the oil industry," said Sara Callaghan Chapell, an Alaska spokeswoman for the Sierra Club. Instead of appointing stewards for Alaska's resources, Norton has "chosen cheerleaders for Big Oil," she said.

Bush administration remains committed to promoting oil development in the Arctic refuge, despite opposition....

The Arctic refuge's coastal plain, which could hold 3 billion to 16 billion barrels of oil, according to Interior Department estimates, is also the calving ground for a huge herd of caribou. Environmentalists say the narrow coastal plain, wedged between the Brooks Range and the Arctic Ocean, is critical to the ecosystem of the Arctic region.

Alaska is the only state to receive the dedicated attention from senior advisers, said Norton, who was visiting Anchorage. That is appropriate, she said, because so much of the vast state is managed by the Interior Department, from national parks and wildlife refuges to Native American tribal affairs.

"Alaska is unique in that respect. This is so much of a part of what the department does," she said.

The positions are especially important "because of the approach that the Bush administration is using on environmental issues," Norton said.

"We want to involve local people in the decision-making. We want to use a consensus-building approach, involving environmentalists and industry and business people and farmers and ranchers and everybody who will be affected by our decisions," she said. For further information about ANWR, see NGS website: nationalgeographic.com/ngm/0108. ❑ ***(cb Billy-Ace Baker)***

REUTERS

Routes Agreement Reached on North Pole Flights

***Reuters*, MONTREAL, 25 Jan 2001**—The International Civil Aviation Organization (ICAO) said late on Wednesday its members had reached agreement on new air routes over the North Pole that will cut flight times around the world.

The Montreal-based body said the agreement will result in more convenient flight schedules, environmental benefits due to reduce fuel burn and savings for airlines and the public.

"It is now possible to open highly advantageous routes to all international aircraft operators," ICAO president Assad Kotaite said in a release.

The deal was reached at a meeting in Paris of an ICAO task group with members from Canada, China, Finland, Iceland, Japan, Mongolia, Norway, Russia and the United States.

The ICAO said a number of successful test flights over the North Pole have confirmed the viability of polar flights to meet the demand for intercontinental air traffic.

"ICAO will continue to closely monitor the progress of implementation and further expansion of the route network as required by air traffic demand evolution," Assad Kotaite added in the statement. ❑ ***(cb Billy-Ace Baker and Nathan Frank)***

Story of Viking Colonies' Icy 'Pompeii' Unfolds From Ancient Greenland Farm

New York Times, **NUUK, Greenland, 8 May 2001, by James Brooke**—The fate of Greenland's Norse colonies has endured as a human mystery ever since the last Scandinavians vanished from this island, apparently two generations before Columbus rediscovered America for Europeans.

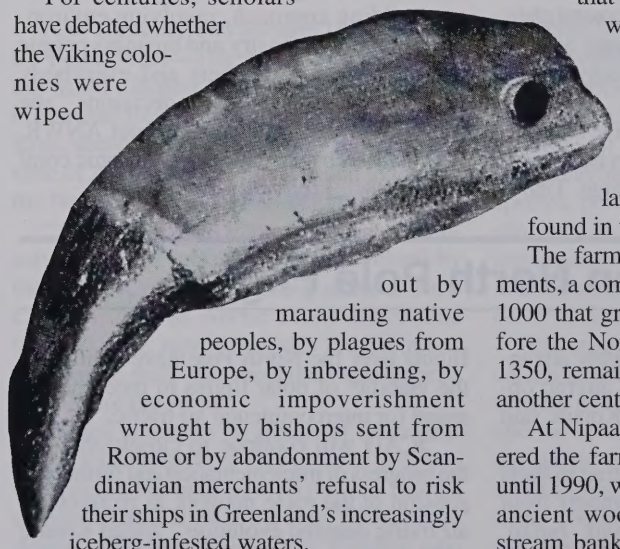
Reuters, courtesy The New York Times

The site, above, lay buried under glacial sands for six centuries. Below left, a canine tooth from a polar bear, with a hole bored so the owner could wear it on a string. Top opposite, a fragment of bowl made of soapstone and a shred of cloth that may have been woven in Greenland.

In one tale, Icelandic fishermen exploring a Greenland fjord in the mid-1550s found the body of an old Viking, face down on the beach with an arrow in his back. In later times, heroic paintings dwelled on the theme of the aged and abandoned Norseman facing his final years alone, like an Arctic Robinson Crusoe, as sea ice closed in on his forgotten fjord.

In the early 1700s, the Danish crown sent a missionary here with orders to re-Christianize Scandinavians presumed to have lapsed into paganism. Sailing up and down Greenland's coasts, the missionary found only natives in kayaks.

For centuries, scholars have debated whether the Viking colonies were wiped out by marauding native peoples, by plagues from Europe, by inbreeding, by economic impoverishment wrought by bishops sent from Rome or by abandonment by Scandinavian merchants' refusal to risk their ships in Greenland's increasingly iceberg-infested waters.



Now, through the use of modern scientific tools, new insights are emerging in studies of a Viking farm site at Nipaatsoq, about 50 miles east of here. Called "The Farm Beneath the Sand," this site lay buried under glacial sands for six centuries. Today, it is called the Viking Pompeii in the Scandinavian press.

"It seems as if the Norse simply packed the things they wanted to take with them and left the area," Dr. Jette Arneborg, a lead archaeologist in the project, said from the Danish National Museum in Copenhagen, where she is studying some of the roughly 2,000 objects retrieved from the farm. "We can't see any chaotic abandonment. We found broken things, things they wouldn't have minded leaving behind."

The discovery of keys and locks suggests that chests that once stored valuables were moved at the time of evacuation. Objects left behind include cumbersome whale vertebra stools and a wooden weaving loom with about 80 weaving weights—believed to be the largest loom from the medieval era found in the North Atlantic.

The farm was part of the Western Settlements, a community established around A.D. 1000 that grew to perhaps 1,500 people before the Norse abandoned the area around 1350, remaining in southern Greenland for another century.

At Nipaatsoq, blowing glacial sands covered the farm in the early 1400s, sealing it until 1990, when two hunters reported seeing ancient wood protruding from an eroded stream bank. Excavation was completed in 1996, and Dr. Arneborg is now coordinating plans for publication next year of a book of reports by more than a dozen scientists who are analyzing soils, pollens, animal bones, ice cores, swatches of cloths, runic inscriptions, body lice and house flies to unravel the farm's "silent sagas."

The Smithsonian Institution's Arctic Studies Center has included several artifacts from Greenland in a Smithsonian exhibit, "Vikings: The North Atlantic Saga," now on tour in honor of the 1,000th anniversary of Leif Ericson's landfall in North America.

At the Viking site near here, artifacts were locked in permafrost and buried under several feet of sand. Many organic artifacts, like antlers, bones, skins and wood, did not decompose. All farm animals appeared to have been evacuated, with the exception of a stray goat, which took refuge in a barn. Six centuries later, its mummified remains were under the collapsed thatch twig roof.

At the farm site, there is no indication that conflict with natives, now called the Thule people, precipitated the Norse departure. Virtually all Thule artifacts discovered at the farm were at the most recent layer of human occupation, indicating that migrating native hunters used the structure as a caribou hunting camp after the Europeans left.

What does seem to have contributed to the abandonment of the Western Settlements, archaeologists said, is climate change. The onset of a "little ice age" made living halfway up Greenland's coast untenable in the mid-1300s, said Dr. Charles Schweger, an archaeology professor at the University of Alberta, who has studied soils around the Farm Beneath the Sand.

Dr. Schweger said the Norse were no match for cooling temperatures, which caused a glacier several miles up a valley to expand. As this glacier grew, it also released more

(Continued Top of Next Page)

water every summer into the valley, causing turbidity in drinking water and raging floods that blanketed meadows with sand and gravel. Today the edge of Greenland's ice cap is only six miles form the old farm site. But in the mid-14th century, it probably was far closer.

The farm's evolving architecture also reflected the effect of cooling temperatures, Dr. Berglund said. Initially, a cluster of earthen walled buildings, the farm evolved over the centuries into one large building with several small rooms, all under one roof. This "centralized farm" maximized body heat of humans and animals.

Ground into the mud were remains of wild animals, their bones cracked open to yield the marrow. Studies of skeletons at a regional churchyard indicate that the Norse diet grew increasingly dependent on marine life, largely seals and fish, as it became increasingly difficult to maintain cows and sheep.

In another reflection of how climate change and degradation of meadows eroded the Norses' pastoral economy, yarn found in the weaving room indicates that the weavers stretched their wool supply by mixing sheep wool with fur from caribou, polar bears, foxes and wolves.

Climate change was not the only factor that caused the Viking colony to decline. Europe's trade with Africa for ivory was becoming easier, allowing comparatively inexpensive African elephant tusks to compete with Greenland's walrus tusks, the Norse colony's main item of trade.

Greenland's last Norse probably retreated to Iceland. Today, some historians speculate that Columbus heard accounts of North America from Icelandic sailors when he sailed near Iceland in the 1480s. ❑ *(cb Abel Shafer)*

Ancient Yarn Suggests Early European Presence in Canada

***New York Times*, HULL, Quebec, 8 May 2001**—A summer spent working at "Greenland's Pompeii" inspired one Canadian archaeologist to take a second look at Canadian collections of native artifacts gathered from Labrador and Baffin Island, a treeless Canadian Arctic region that Viking sagas call "Helluland," or the land of the flat stones.

In December 1999, Patricia Sutherland, an archaeologist, announced that she had found a 10-foot strand of ancient yarn in a collection of Dorset artifacts from Northern Baffin Island that were lying uncatalogued here at the Canadian Museum of Civilization, where she is a curator. The yarn, she said in an interview, "is directly comparable to textiles from the Farm Beneath the Sand."

"The materials, the diameter, and the twist are all the same," she added.

Since the Dorset, forerunners of today's Inuit inhabitants of northern Canada, at the time dressed only in cut and stitched skins, the yarn implied contact with the Norse.

Now, as she studies Canadian collections of native artifacts, Sutherland says, "I am finding new Norse materials every couple of weeks. It suggests there was significant European presence in Eastern Canada in the centuries around 1000 A.D." ❑ *(cb Abel Shafer and Peter Barretta)*

Norwegian Who Proved Vikings Beat Columbus Dies

***Reuters*, OSLO, 29 March 2001, by Jeff Coelho**—Norway's Helge Ingstad, an explorer who proved that Vikings reached North America 500 years before Columbus, has died at the age of 101.

Ingstad, a lawyer and author, led a string of expeditions to the wilds of Alaska, Canada and Greenland and spent years as a fur trapper and trader. As recently as January, he had attended a ceremony to unveil a statue in his honor near Oslo.

Ingstad, his late wife Anne Stine, and a team of archaeologists made history in the 1960s when they found and excavated a 1,000-year-old Viking village in north-east Canada, acclaimed to be Leif Eriksson's fabled Vinland.

Eriksson, son of Eric the Red, fled Greenland around 1,000 A.D. in search of a new home and landed on Vinland, now Newfoundland. Eriksson far pre-dated Christopher Columbus' voyage across the Atlantic in 1492.

Ingtad's crucial discovery was made in 1968, when a bronze garment pin of Scandinavian origin was unearthed at L'Anse aux Meadows, now a UNESCO World Heritage Site.

Born in 1899, Ingstad developed a reputation as a "lone wolf" for his lengthy trips into the wilderness and befriending native Indians from Greenland to Alaska.

He received a law degree in 1922. At 26, the call of the wild prompted him to sell his law practice in Troendelag, central Norway, so he could travel to Canada as a fur trader.

Ingstad wrote about his solitary life as a hunter and fur trader in Canada's uncharted wilderness. The author of several books, "The Land of Feast and Famine" was one of the most sold publications in Norway during the 20th century.

In 1932-33, Ingstad was appointed to oversee Norway's colonial aspirations in Greenland, which ended up as part of Denmark after a bitter feud. He became district governor of Norwegian Arctic island Svalbard in 1935. He spent two years in the late 1930s living with the Apache Indians in Arizona and New Mexico.

He married Anne Stine in 1941 after years of correspondence, the first such exchange when she was just 17 and he 20. She was an archaeologist.

Ingstad soon returned to the wilderness, and celebrated his 50th birthday among the inland Inuit of Alaska at Anaktuvuk Pass in the Brooks Mountain Range.

His fondness for ancient Viking folklore escalated in the 1950s and he set out to track their movements using information from the sagas. Ingstad reckoned the "vin" in the Norse name Vinland related to meadow or grassland rather than to "vines."

In 1960, locals in Newfoundland showed Ingstad and his daughter, Benedicte, the land called L'Anse aux Meadows, which had overgrown remains of sod huts. That eventually led to his fame.

For his Viking settlement find, Ingstad received a gold medal from the British Royal Geographical Society, and was awarded Norway's Royal Order of St. Olav, the nation's highest honorary rank.

His wife died in 1997. "I came to the world just at the right point in time. I got everything with me. I got it in me as a treasure—the impressions and the people," Ingstad said when he was 98. ❑ *(cb Billy-Ace Baker and Peter Baretta)*

Cetacean Seniors:
Whales That Give New Meaning To Longevity

***Science News*, Vol. 158:254, 14 Oct 2000, by Janet Raloff**—Like a stream of massive torpedoes, thousands of blubbery dynamos are making a southwest migration through the icy Arctic Ocean. They're bowhead whales heading toward winter haunts in the Bering Sea, just north of the Aleutian Islands. Along the way, Iñupiat Eskimos in Alaska will legally harvest several of these endangered mammals—30-to-60-foot-long behemoths that sometimes tip the scales at 50 tons or more.

Having hunted these whales for centuries, the Iñupiat are keen observers of the bowhead (*Balaena mysticetus*). Their tales recall whales that hunters had recognized by distinctive scars. In some cases, several generations of storytellers described encountering the same whale, leading to speculation that bowheads might live some 60 years.

Studies now suggest that these whales can actually outlive people—perhaps by a century.

The new research was triggered by hunters finding ancient harpoon points in the foot- thick blubber of newly landed whales. Six points made of stone or ivory have turned up since 1981 (see photo). None of the Iñupiat subsistence whalers could remember having seen such primitive tools used.

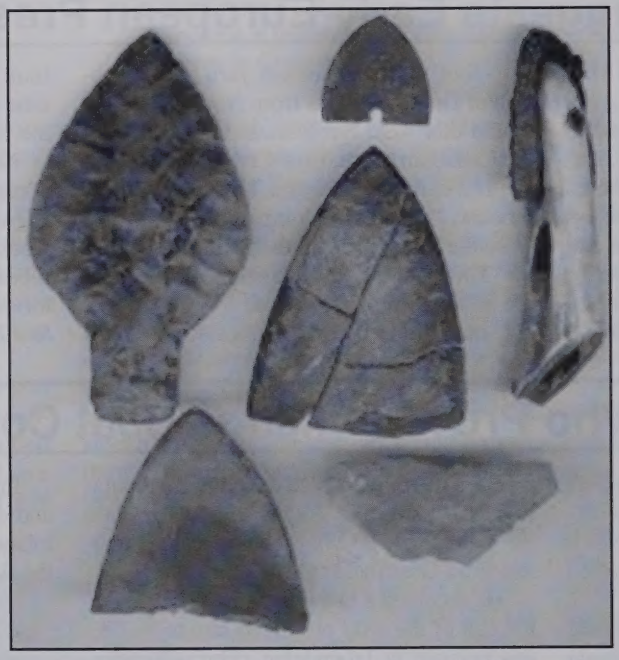
"You have to understand that [the Iñupiat] are technological pickpockets," quips biologist David W. Norton, with a grin of respect. Now working in Fairbanks, he conducted research in Barrow, Alaska, over roughly 3 decades. During that time, he saw Iñupiat hunters in Alaska's northernmost county, the North Slope Borough, quickly embrace any useful technology to which they were exposed. Indeed, history shows that as soon as Iñupiat whalers gained access to metal, around 1870, they swapped it for stone and ivory in their tools.

Against that backdrop, the old harpoon points suggest that at least some contemporary bowheads are survivors of run-ins with whalers 100 years earlier, observes biologist Todd M. O'Hara of the borough's Department of Wildlife Management in Barrow.

To investigate this provocative possibility, O'Hara's colleague J. Craig George began looking for a way to determine the age of elder bowheads. A little research led him to Jeffrey L. Bada of the Scripps Institution of Oceanography in La Jolla, Calif.

A geochemist, Bada has been refining a technique for dating fossils on the basis of changes in their aspartic acid. This amino acid can exist in either of two mirror-image forms. Living things make and use only the left-handed version. However, after death, a body's aspartic acid gradually converts to a 50-50 mix of the two forms. In fossils, that conversion takes about 1 million years.

Bada's team had shown that this change in the ratio also occurs in living animals' body parts that are not undergoing metabolism, such as teeth and the lens of the eye. In such tissues, body heat sets the pace of change in the ratio of left-handed to right-handed aspartic acid.



***Ancient harpoon heads found in modern whales represent two of slate, two of harder stone, and two triangular metal points that represent potential transitional types.* (Photo, courtesy of J. C. George and the Alaska Eskimo Whaling Commission.)**

Indeed, the conversion rate appears to be identical in the lenses of all animals with the same basic body temperature. The scientists have tested more than 20 species, including people and bowhead whales. Bada offered to help calculate the age of North Slope bowheads from that ratio of the two forms of aspartic acid in eye lenses.

George sent tissues from 48 bowhead whales to Bada without letting him know whether each had come from an infant, juvenile, young adult, or mature adult. The chemist's assays accurately dated the relative age of the young whales and indicated that most adults had been 20 to 60 years old at death. However, the lens analyses from five large males suggested that at the time that Iñupiat hunters harpooned them, one was 90, four were between 135 and 180, and one was more than 200 years old.

O'Hara's group has recently recruited two other research teams to apply other techniques to estimate bowhead ages.

Next month, for instance, Mark Baskaran of Wayne State University in Detroit expects to start measuring radioactive lead in samples of bowhead bone. The lead isotope forms during the decay of radium, a naturally occurring calcium-like radionuclide in seawater. Because both the radium and lead decay at known rates, Baskaran can use their ratio to determine the age of bones more than a year old.

Cheryl Rosa of the University of Alaska, Fairbanks plans to assay pentosidine in samples of whales' skin. Aging leads to a progressive build-up of this chemical in many animals' skin. Rosa envisions eventually using it to determine the ages of living whales. A tethered dart can extract a small chunk of skin from a passing animal. Rosa notes, "The whale doesn't even seem to notice."

Bada points out that these complementary studies are important to confirm the longevity indicated by his work. They might even provide further surprises. Unless whales' eyes are much warmer than people's and therefore have a faster aspartic acid conversion rate, Bada says, "what we have assigned the bowheads are only minimum ages—which is staggering! These are truly aged animals, perhaps the most long-lived mammals."

Bada points out, however, that other members of the whale family may also have the capacity to be centenarians, even if they don't live as long as bowheads. Bada claims to have "a bunch of pretty compelling data" to suggest several other whales can get "quite old. ❑

{Editor's Note: this story was judged as one of the top 50 scientific findings of 2000 by **Discovery Magazine,** *January 2001*

New Whale Species

New York Times, **21 Nov 2000, by Henry Fountain**—Scientists say there is a new species of whale on the planet, but it is not as if some unknown behemoths were just found lurking under an iceberg somewhere. Instead, researchers from the Wildlife Conservation Society, the American Museum of Natural History and other organizations have determined that a population of right whales in the northern Pacific Ocean is genetically distinct.

Until now, it had been thought that there were just two species of right whale—one in the Southern Ocean and one found in both the Atlantic and Pacific in the north. But the morphological evidence upon which the two species were differentiated was slim—a single bone in the skull.

The new study, published in the journal *Molecular Ecology*, looked at the DNA from 380 whales and found that there was enough genetic variation to confirm that southern and northern are distinct species and that, among the northern whales, the Pacific whales are distinct from the Atlantic.

Right whales are among the most endangered mammals in the world. Conservation efforts have mainly been directed toward northern right whales in the Atlantic; the new finding may encourage conservationists to look more closely at the Pacific population as well. ❑ ***(cb Peter Barretta)***

Albatrosses in the Air

New York Times, **10 April 2001, by Henry Fountain**—Male and female wandering albatrosses are aerodynamically different, and as a result tend to hunt for food in different areas.

That's the conclusion of a study of albatross body structure and feeding patterns by biologists at the University of California at Santa Cruz and published in the journal *Functional Ecology*.

The scientists found that male albatrosses have higher "wing loading" (more weight for a given amount of wing area) and thus require higher winds to stay aloft for long periods (wandering albatrosses usually ride the wind, without flapping). So males tend to forage in extreme Southern latitudes, among the windiest places anywhere. Females, on the other hand, tend to forage in calmer, more tropical latitudes.

Fledglings, the researchers found, have even lower wing loading and forage even farther north. They suggest that this gives the young birds a chance to hone their flying skills before they need more wind to stay aloft. ❑

Seals Reported Safe From Starvation

The Washington Times, **MOSCOW, 13 May 2001**—The captain of a Russian ship that had been planning to mount a rescue of baby seals said yesterday the situation is less dire than feared and the animals don't need help, the *Itar-Tass* news agency reported.

Experts earlier had predicted that some 200,000 seal pups were likely to die in the White Sea in Russia's far northwest.

Greenland seals migrate south from the Barents Sea to the White Sea each spring to give birth. After the seal pups are weaned, they ride ice floes to the Barents Sea, where their main food stocks are.

This year, however, high winds had left them trapped in an area where most food is too deep for them to reach, experts said, and a Russian shipping company had planned to send a vessel to bring pups aboard; however, the seals are now being gradually carried out into the Barents Sea, and the vessel's captain, Anatoly Voluzhev, said the rescue voyage was unnecessary. ❑ *(cb Peter Barretta)*

Whale Meat of Banned Species Sold In Japan

***Reuters*, TOKYO, 18 Dec 2000**—Some of the whale meat sold in Japan is from species for which hunting is banned by the International Whaling Commission (IWC), a survey released by a Japanese research institute on Monday showed.

In the survey carried out by the Tokyo-based Institute of Cetacean Research, 3.3% of samples it tested of what is being sold as whale meat turned out to be from banned species, including fin and humpback whales, Kyodo news agency said.

The survey, conducted from November 1999 to February 2000, tested whale meat sold in department stores and fish markets and found that 54.3% was from whales caught in Japan's research whaling programme.

Japan says it sells meat from whales caught under the programme to finance the costs.

Most of the remaining samples were from small whales and even from dolphins, neither of which are protected by the IWC, and the institute was unable to identify 2.3% of the samples, Kyodo said. ❑ ***(cb Billy-Ace Baker)***

U.S. Presses Japan to Cancel Plan to Kill Whales

New York Times, **WASHINGTON, 15 May 2001, by Christopher Marquis**—The Bush administration sharply criticized Japan today for expanding a two-year program that seeks to kill scores of internationally protected whales in the name of research.

The State Department spokesman, Richard Boucher, indicated that the United States considers the expedition commercial and will work with other nations to try to dissuade Japan from killing the whales.

"We support the international moratorium on commercial whaling and have expressed our opposition to Japan's expanded scientific program," Mr. Boucher said.

Administration officials said they were studying the possibility of imposing trade sanctions against Japanese firms that produce whaling equipment. But they voiced hopes that international pressure will persuade Japan to recall its expedition.

The American criticism came four days after a fleet of Japanese whaling vessels left for the North Pacific with plans to kill 160 whales by late July. The whalers intend to take 100 minke, 50 Bryde's and 10 sperm whales, administration officials said.

Sperm whales are listed as endangered under the United States' Endangers Species Act and both sperm, and Bryde's whales are protected by federal law.

Whale meat is still a delicacy in Japan, and some Tokyo officials have voiced resentment over what they see as an attempt by the West to impose environmental rules on Japan without regard to local tradition.

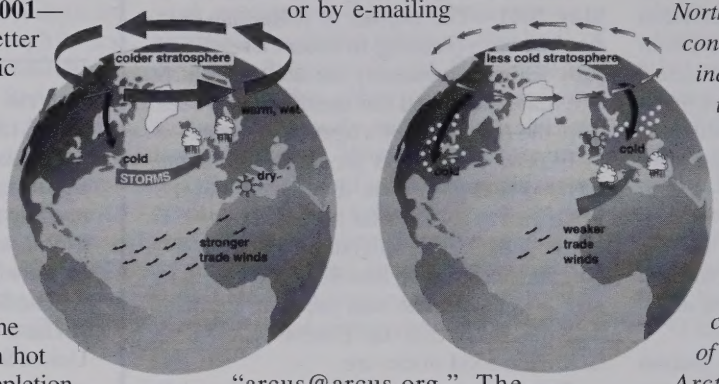
Japan is a signatory to an international ban on commercial whaling, but it does not apply to those engaged in scientific research. Japanese officials assert that they need to study the feeding patterns of the whales to determine which species need to be protected.❑ ***(cb Peter Barretta)***

'*Witness the Arctic*' Chronicles the National Science Foundation's Arctic Sciences Program

***Arctic Research Consortium of the United States (ARCUS)*, Vol. 8, No. 2, FAIRBANKS, Winter 2000/2001**—ARCUS publishes this newsletter twice a year to update NSF's arctic activities. Readers find *Witness* indispensable for keeping up with the rapid developments in research and research planning undertaken by the Foundation.

Interpretive articles and graphics help both researchers and laypersons understand the latest-breaking findings in such hot topics as global change, ozone depletion, oceanographic and atmospheric research.

Subscription to *Witness the Arctic* can be obtained by writing ARCUS, 3565 College Road, Suite 101, Fairbanks AK 99709-3710, or by e-mailing "arcus@arcus.org." The non-profit organization also has a web page at www.arcus.org. ❑ ***(cb Brian Shoemaker)***



The arctic oscillation (AO) is the dominant pattern of atmospheric variability of the Northern Hemisphere. The left panel shows conditions associated with a high AO index, while the right shows the low index state. The AO index, which is highly correlated with surface air temperatures over the hemisphere, has been rising since the mid-1960s. Developing a further understanding of the AO as an Arctic-wide phenomenon of decadal and global change (or both) is a major objective of the SEARCH (Study of Environmental Arctic Change) program. **(Figures courtesy of ARCUS and of D. Thompson, M. Wallace, and K. Dewar.)**

UN: Arctic Ozone Has Stabilized

***Associated Press*, GENEVA, 24 April 2001, by Jonathan Fowler**—The protective ozone layer over the North Pole appears to have stabilized after years of thinning, but the gain may be temporary, U.N. weather experts report.

Scientists from the United Nations' World Meteorological Organization said the recovery may be attributed to a warmer than usual winter and the current peak in the 11-year cycle of the sun, and not to global cuts in the use of harmful chemicals.

"At the peak of the solar cycle there's an intensity of radiation that produces more ozone," said Michael Proffitt, a senior scientific officer at the organization. "Therefore you're going to find less sign of ozone depletion." The sun is now moving back into an 11-year period of declining radiation, meaning the production of ozone will be at its lowest in 2006, said Proffitt. Also, a return to colder winters would likely cause Arctic ozone levels to fall faster, he said.

Ozone depletion has already produced an annual hole in the layer in the stratosphere high above the South Pole. Depletion of the ozone layer over the Arctic and Antarctica is being monitored because ozone protects Earth from harmful ultraviolet radiation. Too much UV radiation can cause skin cancer and destroy tiny plants. The hole in the layer above Antarctica is believed to have caused a rise in skin cancer cases in Australia, Chile and Argentina.

Arctic ozone depletion starts in February, when sunlight triggers chemical reactions in cold air trapped over the North Pole during the winter. It intensifies during March and April before trailing off in May as temperatures rise. Circular winds, known as a vortex, trap air, giving chemicals the chance to react with the ozone.

Scientists are establishing a link between global warming and ozone depletion, Proffitt told The Associated Press. "In essence, warmer temperatures in the atmosphere mean cooler temperatures in the stratosphere, where the ozone is," he said. "And cold means ozone depletion."

In 1989, a gradual, global ban was imposed on chlorofluorocarbons, chemicals commonly used in aerosol sprays, refrigerators and air conditioners. Chloroflourocarbons contain chlorine, one of the major destroyers of ozone. But bromides, another destroyer often used in weed and pest killers, are not being eliminated as quickly, particularly in developing countries.

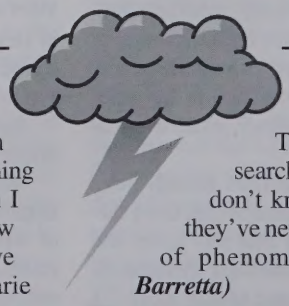
"Even with the cut in chemical use, it's going to be at least 50 years before ozone levels recover," said Proffitt.

Measurements of ozone depletion vary from year to year, making it difficult for scientists to determine the long-term environmental impact of changes in the ozone layer. "The atmosphere is a delicate balance of things," said Proffitt. "When we start disturbing it, we don't really know what it will do." ❑ ***(cb Billy-Ace Baker)***

Arctic Lightning

***Fairfax VA Journal*, 17 Nov 2000**—The native people of the Canadian Arctic say they are now experiencing natural events previously unknown in their oral history—thunder and lightning.

Electrical storms in the high Arctic are among the evidence of climate change being reported in a new study the International Institute for Sustainable Development, based in Winnipeg, Manitoba. The report is being released in conjunction with a U.N. conference on global warming being held in the Netherlands. "When I was a child, I never heard thunder or saw lightning, but in the last few years we've had thunder and lightning," Rosemarie Kuptana of Sachs Harbour, Northwest Territories, told the researchers. "The animals really don't know what to do because they've never experienced this kind of phenomenon." ❑ ***(cb Peter Barretta)***



From Tiny Hum Came Big Bang

New York Times, **WASHINGTON, 30 April 2001, by James Glanz** —Two detectors in Antarctica have discovered minute patterns in a glow from primordial gases, possible traces of the cosmic match that ignited the Big Bang and led to the creation of the universe 14 billion years ago, astronomers announced here today.

The patterns, astronomers said, were probably created by microscopic processes—energy fluctuations at the quantum scale—at work when the universe was a tiny fraction of a second old and smaller than a human fist.

The new observations do not see the quantum fluctuations directly, but instead have found traces of colossal waves, much like sound waves, that the fluctuations probably set in motion, roiling the young universe.

The results rest on the most detailed observations ever made of a glow from the hot gases of the early universe. That glow, called cosmic microwave background radiation, carried an imprint of those waves to the detectors on Earth.

...the universe was a tiny fraction of a second old and smaller than a human fist....

The news comes as a relief for astronomers, some of whom started to worry last year that their basic picture of the origins of the universe might be flawed, after detailed observations failed to find the wave patterns.

"We see the structure of the universe in its infancy," said Dr. John Carlstrom, a University of Chicago astrophysicist who leads the team operating the Degree Angular Scale Interferometer, or DASI (pronounced daisy), a microwave detector at a South Pole research station operated by the National Science Foundation.

Besides DASI, which also involved astronomers at the California Institute of Technology, the announcement today included the so-called Boomerang team. This group flew a balloon-borne detector around Antarctica, and includes astronomers from the United States, Italy, Canada and Britain. Antarctica is excellent for such observations because the air is thin and dry and does not strongly absorb microwave radiation. ❑ ***(cb Peter Anderson)***

Canada Welcomes South Pole Pilots

***Associated Press*, CALGARY, 3 May 2001**—The Canadian pilots who braved bitter Antarctic weather to rescue an ailing U.S. doctor at the South Pole arrived home Thursday to a heroes' welcome.

Chief pilot Sean Loutitt said he felt overwhelmed on returning from the medical mercy mission at the bottom of the world.

Loutitt flew an eight-seat Twin Otter propeller airplane loaded to capacity into the coldest place in the world to rescue an ailing U.S. doctor Ronald Shemenski.

"It was an amazing team effort," he said. "We had lots of people all over the place helping us."

Co-pilot Mark Cary was surprised to hear they were being hailed as heroes.

"It was just another three weeks on the job, really. We are all kind of small-town shy guys really when it comes right down to it," he said.

Shemenski, the only physician among 50 researchers at the U.S. Amundsen-Scott South Pole Station, suffered from pancreatitis.

A second plane flew to Antarctica as a back-up to Loutitt's plane. The two flight crews work for Calgary-based Kenn Borek Air Ltd. ❑ ***(cb Billy-Ace Baker)***

High-Fat Diet Helped Antarctic Adventurers

***The Salt Lake Tribune*, 5 June 2001, by Jane Rae Brooks**—Call it the Antarctic diet. Eat 5,000 calories a day—nearly half from fat—and lose 22 pounds in three months.

It worked for Ann Bancroft. Of course, you have to throw in a little exercise—and do it in one of the world's most inhospitable climates.

Bancroft and Norwegian teammate Liv Arnesen earlier this year became the first women to cross the Antarctic land mass. Bancroft's weight when she set off from Queen Maud Land: 130 pounds. When the pair arrived at McMurdo Station 2,300 miles later, she weighed 108 pounds.

"It was just solid muscle," the Minnesota native said. "There is no excess fat on you—to the point that you've lost your chest."

Bancroft and Arnesen carefully planned their diet to provide the energy they needed to pull 250-pound sleds for up to 16 hours a day in frigid temperatures.

Through trial and error on practice trips, they settled on a new grain-sweetened variety of oatmeal for breakfast, which allowed them to eliminate moisture-containing brown sugar. For extra calories, they added dried fruit, nuts and a shot of the same oil that McDonald's uses to cook its fries.

They grabbed lunch on the fly, sipping sports drinks and munching on foot-long chocolate bars and high-energy bars. Dinner was their indulgence. They heated a quick cup of packaged soup, then nibbled on vacuum-packed Pringle potato chips while preparing their main course. They often ate the crushed chips from a bowl with a spoon. For their entree, they alternated four freeze-dried meals: pasta, beef stew and two fish dishes. There were no complaints about lack of variety. "Neither of us are picky eaters," said Bancroft. "We liked those meals for 97 days." ❑ ***(cb Billy-Ace Baker)***

www.americanpolarsociety.org

Thanks to the creative efforts of our webmasters Juan Reyes and Billy-Ace Baker, a new and improved American Polar Society website has been established and is now up and running. You can log on at www.americanpolarsociety.org.

We are just beginning to explore the potential of a website, but clearly it offers tremendous opportunities for providing timely information to our membership. It will attract new members and provide a link with other organizations that share our interest in polar affairs. How best can it serve APS? The answer to that question by rights should come from you, the members, who will be the principal users and hopefully major contributors to the website.

Frank Stokes, Secretary of the APS, will coordinate policy and procedural issues for the website, and he asks that you send him your thoughts and comments on how we can build and maintain a vibrant website responsive to the needs and interests of our membership. Frank can be reached at Sto396@yahoo.com. ❑

Fifty More Years Below Zero

Tributes and Meditations for the Naval Arctic Research Laboratory's First Half Century at Barrow, Alaska

2001. Edited by David W. Norton, with foreword by Maxwell E. Britton.
Calgary, AB and Fairbanks AK:
Arctic Institute of North America,
distributed by University of Alaska Press.
xvi + 576 pp. Illustrated, Indexed. • $20.00 (U.S) Soft cover.

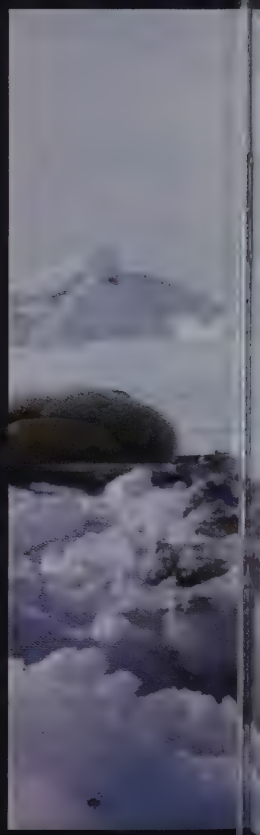
Review by Dave Norton

By July of 1949, when 26-year-old Howard Feder arrived at Barrow to spend a year working for Professor George MacGinitie, North America's premiere arctic laboratory had assumed much of the institutional aura of excitement that it was to maintain for the next 31 years under the aegis of the U.S. Navy. Feder's chapter in this soon-to-be-released book is one of over 100 contributed articles and letters that chronicle the Laboratory's development, its role in pioneering themes in arctic science, the extraordinary and essential support by Iñupiat Eskimos for the conduct of research, and the resurgence of research at the facility in recent years under civilian management by the local village corporation.

Professor Feder, now retired from the University of Alaska's Institute of Marine Science, was the first biologist to spend an entire year at the NARL. He was both surprised and delighted to find his 50-year old journal and a collection of Kodachrome slides largely intact when the editor invited him to contribute a chapter to this book. The freshness of his enchantment with all aspects of his early experience of the Arctic shines through his account, as it does through accounts by contributors whose experiences at Barrow and the Laboratory date from more recent years.

Readers will find a good deal of historical connectivity running through this volume. The chance discovery of the Barrow Canyon by Prof. MacGinitie, for example, eventually paid off for Waldo Lyon and the U.S. Navy's first successful transit of the Arctic Ocean by nuclear submarine in 1957, as described in Dr. Britton's Foreword. Readers sharing today's concerns for global climate change will have several occasions to say, "Aha!" Trace gas analyses were pioneered by Dr. John Kelley at NARL in the late 1950s, fossil atmosphere analysis from ice cores was initiated from the Lab by Pete Scholander in the late 1940s, and vegetation and floristic transects between Barrow and Atqasuk in the 1990s to the present continue to support climate change modeling, as described in Webber et al.'s chapter. Similarly with "Traditional Ecological Knowledge" (TEK), a body of expertise resident in indigenous societies that live off local resources: Consultation of TEK was a time-honored practice at the Barrow Laboratory long before the modern acronym for it had been coined, as Feder's and Dr. Tom Albert's articles, and the careers of Laurence Irving and Pete Scholander illustrate.

Lest this book sound like a dry collection of science history, I hasten to promise abundant laughter from its pages. Ray Dronenburg's account of trying to resurrect the *Alumiak* for sea duty in the late 1970s, John Kelley's portrayal of JB, the Lab mascot dog, John Burns' discussion of scrapes with denning polar bears, and many vignettes within the 63 letters at the end of the volume come to mind as sources of merriment. The Laboratory and northern Alaska generally has attracted colorful characters throughout its history to the present. Therein perhaps lies the untold secret behind this anthology: colorful characters got together, blended in a sense of adventure and mischief, and along the way produced a remarkably steady output of noteworthy research. ❑



Clam, attach
seafloor at a
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Howard M. F

soft coral, and hitchhiking chiton dredged from pth of 341 feet (105 m) 6 miles (10 km) offshore of y Prof. George MacGinitie's crew aboard the Ivik 1949. (Photo by George MacGinitie, courtesy of er)

Professor George MacGinitie's research craft, the Ivik, *prior to her last collecting trip of the ice-free season offshore of Barrow on 11 October 1949. MacGinitie and his collaborators sometimes returned to shore by dead reckoning through dense fog, after dredging and trawling the seafloor at the confluence of the Chukchi and Beaufort Seas. Surveys of benthic invertebrates at Barrow in the early days of the Naval Arctic Research Laboratory led to their discovery of the Barrow Canyon, a trench that plunges through the continental shelf break toward the Arctic Basin's abyssal plain.* (Photo, courtesy of Howard M. Feder)

The legendary Pete Sovalik of Barrow, Alaska, deploying a bathythermograph through the ice in May 1950 for Prof. George MacGinitie's project on benthic invertebrates. (Photo, courtesy of Howard M. Feder)

Old Antarctic Explorers Association Invites Membership

The recently-formed Old Antarctic Explorers Association invites present and former members of Operations Highjump, Windmill, Deep Freeze, etc., to join.

Associate membership is offered to men or women who do not qualify for Member status but who desire to support the goals of the association.

One of the major goals of the association is to initiate public exhibition of artifacts collected over the years by OAEs. This also includes lobbying Congress and the National Science Foundation to release a ski-equipped LC-130 Hercules aircraft to become the centerpiece of a proposed Antarctic museum. Additional goals include assistance in the education efforts of those who display an interest in studying Antarctica.

Jim Eblen is the current president of the Association, which publishes *Explorer's Gazette*, a quarterly online newsletter edited by Jim O'Connell.

Annual dues are $10, plus a one-time enrollment fee of $2. The Association is currently seeking to become a federally recognized nonprofit organization.

Email adress: penguin64@worldnet.att.net or write to The Old Antarctic Explorers Association, 4615 Balmoral Drive, Pensacola, Florida, 32504.The association web site address is: www.oaea.net. ❑

OLD ANTARCTIC EXPLORERS ASSOC. OAE SOUTH POLE

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Ice Probe Reveals First-Ever Images Deep Within Antarctic Ice Streams

NASA, Jet Propulsion Laboratory, **PASADENA, 16 Mar 2001**—Scientists have had their first inside look at ice layers, frozen debris and a surprising channel of water deep beneath an Antarctic ice stream, thanks to an ice probe designed by NASA's Jet Propulsion Laboratory, Pasadena, Calif.

Plunged more than 1,200 meters down four boreholes drilled in the West Antarctic ice sheet, JPL's probe paves the way for the development of technology capable of withstanding extreme environments on Earth and other planets.

"This project fits into the bigger picture of planetary studies," said Dr. Frank Carsey, JPL's principal investigator on the project. "It provides us with some understanding of how to observe what goes on deep in ice caps—Earth's ice caps, Martian ice caps and ice caps on Europa." Europa is an ice-covered moon of Jupiter.

The glaciological investigation took place at Ice Stream C, an area in the West Antarctic ice sheet where 150 years ago the ice suddenly stopped flowing in one area in the lower part of the stream. This so-called "sticky spot," currently flowing at a rate of 2 meters per year, greatly differs from its neighboring streams, flowing at approximately 400 meters per year.

Equipped with two cameras and lights, JPL's ice probe revealed what appears to be a basal water system, or series of water channels at the base of the ice stream. In places, this water-filled cavity measured approximately 1.4 meters deep. Based on previous calculations, researchers expected the depth of a water basal cavity to be only in the millimeter range.

To the researchers' surprise, they also found rock and other debris embedded in the ice much higher than expected. It was believed that frozen debris would be found no higher than two meters off the base of the ice stream. In contrast, the visual data shows frozen debris some 26 meters off the base, which has yet to be explained.

A layering effect in the ice was also uncovered by the probe. Though not yet fully understood, it is thought that, upstream, ice and gravel have frozen onto the base of the ice sheet. With the ice streams constantly moving, water may slide under debris-laden layers, lifting them up, allowing the process to repeat.

"The layered information will turn out to be very interesting," said Carsey. "These layers tell us about processes upstream." By analyzing these ice layers, researchers may learn how ice streams flow and stop flowing.

The team's findings open up the doors to further glaciological research. "With the probe, we have now left the dark ages," said Hermann Engelhardt, Caltech's principal investigator on the project. JPL hopes to advance the probe's technology in the next year or two, adding biological sensors to search for evidence of life in the Antarctic ice sheet and eventually on other planets. Microbes are known to reside under mountain glaciers, where it is warmer and there are nutrients from impurities found between water crystals.

"These locations are very old places. Some, such as on Mars, are hundreds of millions of years old," said Carsey. The base of a planet's polar cap chronicles the planet's climate and can reveal much about its history and biology, he said. **(Source: JPL Media Relations Office)** ❑

Cocoa Tin 'Souvenir' Returns To Ice

New Zealand Press Association, **5 Mar 2001, by John Henzell**—A tin of cocoa "souvenired" from Captain Scott's hut in Antarctica will return to its rightful place, thanks to the conscience of a former United States serviceman.

The one-pound tin of Fry's Cocoa had traveled from England to Antarctica in 1910 with Captain Scott's ill-fated expedition to the South Pole and was abandoned in the hut when the surviving members of the expedition returned to New Zealand in 1913.

It remained in the hut until Operation Deep Freeze in the mid-1950s brought US Navy photographer Ken Meyer to Antarctica to chronicle the construction of McMurdo Base nearby. Mr Meyer visited Scott's Cape Evans hut and, as was the habit of the time, took the tin as a memento of how much he had enjoyed his time on the Ice.

Mr. Meyer retired to Christchurch, N.Z., in 1999. After he read a report in *The Christchurch Press* about the efforts being made to preserve the huts of the heroic age of Antarctic exploration, he decided that it was time for the tin to go back to its rightful place. If getting a "red face" at the age of 65 by owning up in public to having taken the tin meant others might hand back their own souvenirs, he reckoned that it was worth it.

"When I first went down to the Ice as a young man, we just didn't think that you shouldn't take souvenirs. The huts looked like they were totally abandoned," he said.

Antarctic Heritage Trust executive officer Nigel Watson gratefully accepted the well-travelled tin, which faces yet more travelling to take it back to Scott's Cape Evans hut.

Despite its globe-trotting, Mr Watson said, "The tin was in good condition and might be in better condition now because of Mr Meyer's careful protection of it." ❑ *(cb Billy-Ace Baker)*

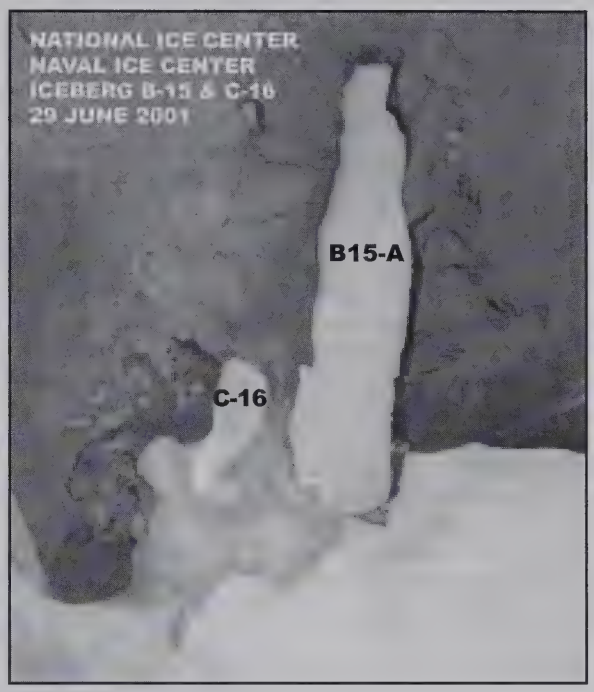
Tracking Rogue Giant Icebergs From the Skies

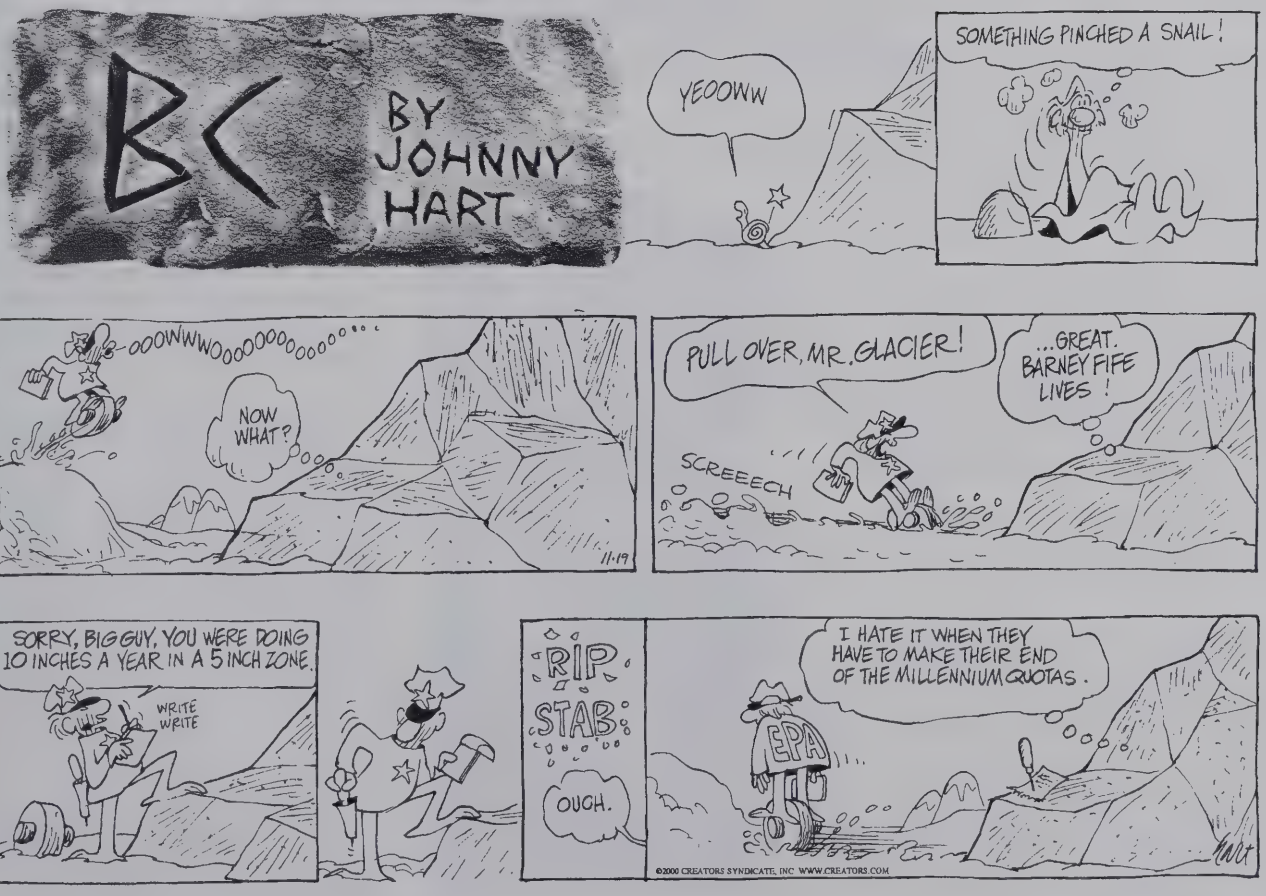
***New York Times*, 28 Nov 2000**—Scientists continue to monitor the adventures of one of the biggest icebergs in modern memory, and its progeny, using weather satellites and aerial photography. The iceberg, designated B-15, launched itself off into the sea off Antarctica last March, when a slab of ice roughly the size of Connecticut broke off the Ross Ice Shelf. *(See centerfold, Spring-Summer 2000 issue.)* It has been causing trouble ever since.

In the intervening months the iceberg has broken into four pieces, and one of those subsequently swung back into the Ross Ice Shelf, knocking yet another new iceberg loose from the shelf.

At birth last spring, B-15 was 170 miles long and 25 miles wide. In early November the largest chunk, B-15A, was 96 miles long and 22 miles wide and was lumbering slowly westward toward the McMurdo Sound.

Scientists worried that the wandering icebergs could be a hazard to navigation and said shipping lanes could be shut down if the icebergs drifted into them. They said, however, that the tides and currents around Antarctica were not well known, making it difficult to predict the future course of the icebergs. ***(cb Brian Shoemaker)*** ❑





By permission of Johnny Hart and Creators Syndicate, Inc.

Matthew Henson Earns Overdue Honor

***Washington Post*, WASHINGTON, D.C., 29 Nov 2000, by Ken Ringle (abridged)**—Originally hired as his valet by Robert E. Peary for the 1909 American expedition to the North Pole, Matthew A. Henson became the expedition's expert sled dog handler and learned to speak Inuit. Over 90 years after his courageous performance in polar exploration, the National Geographic Society awarded Henson its coveted Hubbard Medal posthumously, citing his distinction in exploration, discovery, and research.

The ceremony took place in the Matthew Henson Earth Conservation Center at Buzzard Point on the shore of the Anacostia River. Henson's grandniece, Audrey Mebane, accepted the medal, to which the National Geographic Society added a $50,000 bequest for equipment to the Earth Conservation Corps, supplementing an annual fund of $10,000 in Henson's name for college scholarships to minority students from the District of Columbia.

Matthew Henson's great-niece Audrey Mebane was presented his posthumous Hubbard Medal by the National Geographic Society in November 2000 **(Photo by Bill O'Leary, Washington Post)**

Whatever successes the 1909 Peary Expedition achieved seem attributable to the skills of the humble African American, Henson, whose memory is still vivid among Inuit communities through which the expedition traveled. ❑ ***(cb Peter Barretta, Nathan Frank)***

Bering Sea *(Continued From Page 1)*

When entered dry, the suits can keep a person alive in freezing water for hours, but if water enters the outfit, the survival times are drastically reduced. Survival time for a human immersed in the near-freezing water of the Bering Sea is measured in minutes. The water temperature was 36 degrees the night the *Arctic Rose* disappeared. Seawater freezes at 28 degrees.

Dave Jentry, captain of the *Alaska Spirit*, a 98-foot trawler, has been fishing in Alaska for more than two decades and can only guess what sank the *Arctic Rose*, said "There is not one day out there you don't worry about getting home."

Coast Guard investigators will examine modifications made to the *Arctic Rose* that might have changed how it rides in the water. One former crewman who worked on the boat when it was under different ownership described the vessel as too narrow and tippy for the Bering Sea.

The loss of the *Arctic Rose* has renewed calls by Coast Guard officials for more regulation of this risky enterprise, but the commercial fishing industry and many of its political patrons have zealously protected the business from increased safety requirements. Congress has consistently refused to grant the Coast Guard more power to inspect fishing captains and their vessels.

One skipper in Kodiak who supports more oversight says that the fish he catches have more protections from the government than the crews he takes to sea.

An unidentified crewman from Oregon said many fishermen probably would welcome more safety rules. "But the skippers and owners...want to catch fish and make money. So do I. But I have walked away from boats that look bad."

Wholesale commercial fishing in Alaska is a $1.2 billion-a-year industry—more than half the seafood caught in U.S. waters comes from the state. Taxpayers also subsidize the industry through the Coast Guard stations, cutters and helicopters to watch over the fishermen. ❑ ***(cb Peter Barretta)***

BY LARRY FOGEL—THE WASHINGTON POST

Barge Seaman Drifts Weeks in Bering Sea

***Washington Times*, MOSCOW, 19 Nov 2000**—A seaman was rescued this weekend after being stranded aboard a barge for 19 days as it drifted through rough and frigid seas between Russia and Alaska, news reports said.

The seaman, Ivan Shchur, was the only person aboard the barge when it was carried away in the Chukotsky Sea of Russia's Far East coast. The barge drifted through the Bering Strait and became caught in ice between the Russian coast and Alaska's St. Lawrence Island, the reports said.

The barge was discovered by the Russian tanker Ventspils and two of the tanker's officers donned diving suits and crawled over the ice to reach the barge. ❑ ***(cb Peter Barretta)***

Arctic Ice Thinning

Fairfax VA Journal*, 1 June 2001**—Ice sheets covering the Arctic waters are reported to have thinned noticeably over the last seven years, possibly the result of global warming, according to a Norwegian explorer who just completed a solo skiing journey across the top of the world. Explorer Boerge Ousland, speaking after an 82-day trip in which he traveled 1,300 miles from the northern tip of Russia to the North Pole and then down to Canada, told reporters that he had seen other evidence which hinted strongly at the effects of climate change. Ousland said he had been startled to see large pieces of driftwood from Siberia very near the North Pole, as well as a much larger population of polar bears in areas where they had not been observed before. ❑ ***(cb Peter Barretta)

A Work in Progress: A Tribute—VX-6 At It's Best

by Ernest E. Angino
Department of Geology
University of Kansas, Lawrence Kansas

Editor's Note: *The following piece was sent to Polar Times by Ernest E. Angino Professor Geology Emeritus, University of Kansas. As the reader will quickly see and Professor Angino repeatedly points out, there are many holes to be filled and a great deal of long overdue recognition owed to the Airman who accomplished this hazardous rescue and evacuation mission.*

It's a great story—Professor Angino provides the framework, and it is our hope that our readers will fill the holes, name names and if any personally involved in this mission they will write and offer more details of what took place in what was still the early days of polar aviation.

Over the years of its operations, Air Development Squadron VX-6 carried out an enormous number of flights and operations. To me, one of its most difficult and unrecognized accomplishments occurred early in the 1959-1960 operational year. The crewmen who carried it out deserve more recognition than they have received.

Sometime late in November 1959, McMurdo Operations received information of a severe medical problem at Wilkes Base in Australian Antarctic Territory. A radio technician had developed severe mental problems shortly after being put ashore at Wilkes from the resupply vessel *Nella Dan*. He was part of the new relief and wintering-over party for Wilkes Base.

Just after *Nella Dan* had departed Wilkes with no return planned until the following year, the technician became incapacitated. To keep him over the winter in such a condition was unthinkable. What to do? Could the U.S. and McMurdo operations help by evacuating him? This, of course, posed a serious equipment problem, as well as severe operational difficulties.

According to my recollection [I was part of the 1959-1960 scientific research team], it is approximately 1,200 miles from McMurdo to Wilkes Base—a long, long flight in a P2V, the standard aircraft in use at that time. A decision was made to mount an evacuation attempt. As I remember, all participants in the proposed flight were volunteers. Some of you who read this may have been part of this dangerous medical mission. If so, any comments would be welcome as well as any corrections to this story.

Several scientists wanted to go along on the trip but, for many reasons, only one—Dr. Edward Thiel, a geophysicist from Wisconsin and a personal friend—had a valid reason to go. At that time, it was desirable to attempt to tie Antarctica together on a gravitational and magnetic grid survey basis. Consequently, after completely recalibrating the equipment, Dr. Thiel became a part of the mission.

A P2V was outfitted with a large rubber bladder [sausage skin] for aviation fuel, and a double crew was mustered to man the long flight for the P2V to Wilkes Base. The plane was essentially a flying gasoline tank. Moreover, since navigation over so long a P2V flight [remember, these were pre-satellite days] was a problem, an R7V [Constellation, or "Connie"] was also outfitted with two volunteer crews and prepared for the Wilkes flight to provide navigation coverage, *i.e.*, to serve as a mother ship and for navigation.

The cold recorded facts detailing this mercy flight do nothing to reveal what happened as regards the concern, danger, and operational skills involved. The official data are impersonal. The bulletin of the U.S. Antarctic Projects Officer for April 1960 states on pages 4-5, in a summary of Operation for Deepfreeze '60, the following quote: "Escorted P2V-7 to Wilkes."

P2V Neptune taxiing for takeoff from skiway at McMurdo Sound during International Geophysical Year. **(Photo courtesy U.S. Navy VX-6)**

That's it! However, it is my recollection that the Connie R7V was airborne for over 20 hours, a difficult operation in those days.

The P2V left McMurdo on December 2, 1959 [with the Connie] for Wilkes, then landed, re-gassed and picked up the sick technician. While this went on, Dr. Ed Thiel completed his gravimetric and magnetic readings, helping to complete the McMurdo-Wilkes tie.

The P2V went airborne after a short stay at Wilkes. Perhaps a crewmember can help with this gap in the story? The official report does not say anything about this aspect of the trip.

The Connie then led the P2V safely back to McMurdo. Again, all that is entered into official report, on page 5 of the report for the P2V, are these words under flights from McMurdo: "Wilkes Station Evacuation Flight."

Again, that's it! Cryptic. Brief. Nothing else!

In my opinion those men—who are not listed anywhere!—deserve far more recognition and credit for this dangerous operation than they have received. The technician was subsequently flown to Christchurch, New Zealand, and hospitalized. What happened after that, I don't know. Dr. Thiel completed his scientific work, tying the sites together—a real accomplishment 40-plus years before the availability of satellites and modern electronics. [Unfortunately, Dr. Thiel was later lost in an airplane crash in Antarctica.]

Other remembrance and documentations of that flight occur in the postal history of Antarctica. Several people, myself included , made up letters [covers] for Dr. Thiel to carry on that flight. I know of five individuals who made up two covers each. There may be many more from the crewmembers involved. We posted one letter with a U.S. stamp which was flown to Wilkes and returned by Dr. Thiel and signed under these words, "This envelope was carried on the flight of Dec. 2 , 1959, from NAF McMurdo to Wilkes Antarctica. This is the first flight by this route that landed at Wilkes Station. A second cover with the same wording, and also signed by Dr. Thiel, was posted with Australian stamps at Wilkes and taken out the next year [1960] by the re-supply ship *Nella Dan* and then flown back to the U.S. So both cover types document this flight. I know of at least eight and possibly ten such covers in existence. There clearly may be more.

Given the scientific significance and operational rigors of this flight and the attendant difficulties experienced by the P2 and R7 crews, another fact surprises me: Nothing of this flight is noted in Henry Dater's *Aviation Monograph on Aviation in Antarctica* [Dater,1963].

I would appreciate any additional facts as to personnel, the flights to and from, and any other remembrances of this mission. It's a great credit to the flying skill and professionalism of VX-6 airmen, both officers and enlisted. I look forward to more information.

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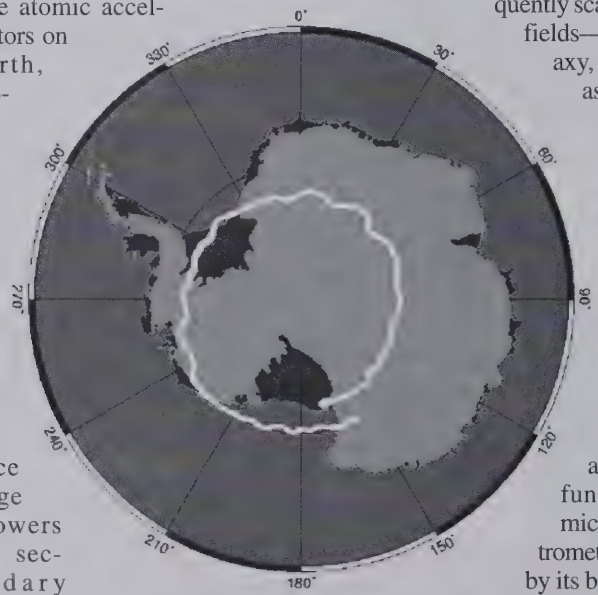
Ballooning for Cosmic Rays

***Science.NASA.gov*, Jan. 12, 2001**—Hold out your hand for 10 seconds. A dozen electrons and muons just zipped unfelt through your palm. The ghostly particles are what scientists call "secondary cosmic rays"—subatomic debris from collisions between molecules high in Earth's atmosphere and high-energy cosmic rays from outer space.

Courtesy of NASA/NSF

The ATIC payload hangs from a launch vehicle while the helium balloon is being filled in the background by personnel from the National Science Balloon Facility. The ATIC experiment lifted off on its circumpolar trip on Dec. 28, 2000. It was deployed to measure Galactic cosmic rays.

Cosmic rays are atomic nuclei and electrons that streak through the Galaxy at nearly the speed of light. The Milky Way is permeated with them. Fortunately, our planet's magnetosphere and atmosphere protects us from most cosmic rays. Even so, the most powerful ones, which can carry a billion times more energy than particles created inside atomic accelerators on Earth, produce large showers of secondary particles in the atmosphere that can reach our planet's surface.



Track of the balloon

Where do cosmic rays come from? Scientists have been trying to answer that question since 1912, when Victor Hess discovered the mysterious particles during a high altitude balloon flight over Europe. Galactic cosmic rays shower our planet from all directions. There's no definite source astronomers can pinpoint, although there is a popular candidate.

"Most researchers are betting that cosmic rays come from supernova explosions," says Jim Adams of the NASA/Marshall Space Flight Center. When massive stars explode they blast their own atmospheres into space. The expanding shock waves can break apart interstellar atoms and accelerate the debris to cosmic ray energies. Cosmic rays are subsequently scattered by interstellar magnetic fields—they wander through the Galaxy, losing their sense of direction as they go.

To test the supernova theory, a team of scientists led by John Wefel (Louisiana State University) and Eun-Suk Seo launched a helium-filled balloon from McMurdo on Dec. 28, 2000. The payload, which is now 120,000 feet above Earth's surface, includes a NASA-funded cosmic ray spectrometer known by its builders as the Advanced Thin Ionization Calorimeter (ATIC).

By the time ATIC lands on January 12th or 13th, the spectrometer will have been in the stratosphere counting cosmic rays for nearly two full weeks.

The long flight time, more than any other reason, is why the researchers chose to fly the balloon over Antarctica. "We would be happy to fly this payload over North America," says Adams. "The problem is that we need the spectrometer to be aloft for a long time. Antarctica has two advantages: It's international territory, so we don't need to apply for lots of overflight permissions, and the Antarctic Vortex (a circulating weather system around the south pole) keeps the balloon confined to airspace over the continent."

And what if the supernova model can't be rescued? "There are other possibilities," says Wefel, "but not a lot of good ones. We'll really have to look hard to find something other than supernovae that can meet the cosmic ray energy requirement." For further information about ATIC see LSU website: http://atic.phys.lsu.edu/aticweb. ❑ ***(cb Peter Anderson)***

Courtesy of NASA/NSF

Supernova explosions, like the one that created the expanding Crab Nebula, may be the source of galactic cosmic rays.

Old Air Tells of Past Environments

Columbus Dispatch, **18 Feb 2001, by Seth Borenstein**—Six scientists pitched their tents in Antarctica for two weeks last month in search of stale, 100-year-old air.

To create what will be America's first library of air from decades gone by, they drilled as deep as 400 feet into the snow by the South Pole and filled 14 long metal cylinders with the air trapped inside.

By preserving air from the past, scientists can tell decade-by-decade how our atmosphere changes.

Trapped air survives within snow for about 100 years before the crushing weight of newer snow solidifies it to ice. At that point, much of the air disappears, especially key gases that occur only in trace amounts.

Jim Butler, a National Oceanic and Atmospheric Administration scientist, said the vintage air smells much the same as new Antarctic air: cleaner and fresher than air in developed regions.

The 400-gallon air archive reached Los Angeles this week. It will be trucked to NOAA's Climate Monitoring and Diagnostics Laboratory in Boulder, Colo., site of the air museum. Australia has one, but its samples go back only a quarter-century.

It was a century-old Antarctic air sample collected in 1995 that enabled scientists to determine that ozone-depleting chlorofluorocarbons were not natural in the Earth's atmosphere, but had appeared in the 1940s.

The old air wasn't easy to gather. Scientists had hoped they'd captured about 200 cubic feet of old air, but they ended up with just 50. Because they needed absolutely uncontaminated air, they had to trek miles from the permanent South Pole station. ❑ ***(cb Peter Anderson)***

Antarctic Ice Discovery Warms Climate Change Debate

Reuters, **SYDNEY, 14 Jan 2001, by Michael Byrnes**—The discovery in a core of ancient polar ice of evidence of a sudden Antarctic temperature rise thousands of years ago has added fuel to the debate on global warming.

The find, by scientists working on an ice core taken several kilometers beneath the surface, is the first evidence of rapid warming in the Antarctic and matches existing evidence of warmer bouts in past aeons in the north pole region.

It suggests a temperature spike of around four degrees Celsius took place in the south pole region over about a decade 19,000 years ago.

"That's a significant temperature change (over) about a decade... Pretty phenomenal," said Dr David Etheridge, a scientist with Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO).

The discovery, by University of Colorado Associate Professor James White towards the end of last year, is sending Australian scientists back to examine their own drill cores of Antarctic ice.

Scientific interest in White's discovery, from cores taken from coastal West Antarctica, has been heightened by a correlation between the time of the temperature spike and an abrupt rise in sea levels at about the same time, as documented by Australian National University research.

"It is fuel for the argument that climate change can be rapid and that the Antarctic ice sheet can melt," Etheridge said.

Not everyone agrees. White's discovery, which all scientists caution needs verification, is providing as much fuel for sceptics as for committed believers in greenhouse warming.

Professor Pat Quilty, former chief scientist with the Australian Antarctic Division and now an academic with the University of Tasmania, says the Antarctic temperature spike counters doomsday theories of melting Antarctic ice sheets.

Belying the beliefs of those on the global climate change bandwagon, the new Antarctic readings showed natural change could be as dramatic as anything produced by man, he said.

"This is taking a more reasoned view," Quilty said. "Nature imposes some pretty dramatic changes."

In contrast, Etheridge says ancient Antarctic ice is proving that warming thousands of years ago took place after changing orbital tilts of the earth triggered a release of the greenhouse gas, carbon dioxide, from the oceans.

Greenhouse gas was part of the cause of warming even then, long before industrialisation increased the amount of gas clogging the atmosphere, he said. ❑ ***(cb Billy-Ace Baker)***

Melting Ice Sheet Shows Antarctic Erosion

***Associated Press*, WASHINGTON, 2 Feb 2001, by Paul Recer**—Scientists have worried for decades that the Antarctic ice sheet was shrinking, threatening a global rise in sea level. Now satellite studies show that about 7.5 cubic miles of ice have eroded from a key area in just eight years.

Melting of that much ice doesn't mean that it is time to get into boats, said one researcher, but the finding may be a "yellow warning flag" confirming that long-term changes are under way in the ice fields covering the South Polar region.

The study, which appears today in the journal *Science*, involved altitude measurements of the West Antarctica Ice Sheet, the smaller of two major ice sheets. It covers 740,000 square miles of the frozen continent.

Based on satellite measurements, said Andrew Shepherd, a University College London geologist and first author of the study, it appears that since 1992 the sheet has lost ice principally through the speeded-up movement of the Pine Island Glacier, an ice stream that drains about a third of the ice sheet.

"The Pine Island Glacier is key," said Shepherd. "It is totally exposed to the sea, and people have identified it as the weak underbelly of the West Antarctica Ice Sheet."

Melting of the entire sheet theoretically could cause a global sea level rise of 25 to 45 feet, but Shepherd said that at the present rate of change it would take centuries for the Pine Island Glacier, which composes only about 10 percent of the ice sheet, to affect sea level seriously.

Jane Ferrigno, a U.S. Geologic Survey geologist and polar ice expert, said a speedup of the Pine Island Glacier, as reported by Shepherd and his co-authors, could foreshadow continuing changes of the West Antarctica Ice Sheet's ice levels.

The glacier "is moving faster than we thought," Ferrigno said. "This doesn't mean it could have an effect on coastal areas around the world within the next few decades, but this is a yellow warning flag. This is an area that should be watched carefully."

Shepherd said eight years of satellite data show a steady trend of ice sheet shrinkage, with most of the decline coming in the Pine Island Glacier system, which drains an area about the size of the Mississippi River basin. ❑ ***(cb Billy-Ace Baker and Capt. David Moyer)***

Penguins in Trouble Worldwide

New York Times, **26 June 2001, by Carol Kaesuk Yoon**—Harry's habits were as predictable as clockwork, so when he did not return from his last ocean voyage as expected, Dr. Dee Boersma knew something was wrong.

"We had signals until Dec. 6," said Dr. Boersma, a penguin researcher at the University of Washington who encountered Harry—a penguin outfitted with his own satellite transmitter—at a nesting area at Punta Tombo, Argentina. Harry headed out to forage at sea while his mate took her turn on their eggs, Dr. Boersma related. "Then we never heard from him again. We looked for him to come back every day. We just don't have adult birds disappear like that."

But late last year and early this year, the summer breeding season in the Southern Hemisphere, Magellanic penguins like Harry did disappear at sea. Thousands more washed up dead on the beaches north of Punta Tombo. Many birds abandoned their nests, leaving chicks to starve. Among the survivors, many were in bad shape, having difficulty finding the fish they needed to sustain themselves.

"This is the worst year ever," said Dr. Boersma, whose studies of the colony over 18 years have been supported by the Wildlife Conservation Society. "And we keep getting a lot of bad years."

Researchers say the Magellanic penguins at Punta Tombo, which have steadily decreased in number for more than a decade, are not alone. Around the world, many penguin populations are declining, researchers say, and evidence is mounting that global warming, whether natural or human-induced, is a prime cause.

Unless things change, they say, the outlook for some of these penguin species will be grim. Ten of the world's 17 penguin species are already listed as threatened or endangered.

Though a few species are thriving, "penguins, in general, are experiencing some really serious problems," said Dr. Lloyd Davis, penguin biologist at the University of Otago in New Zealand. "They are in trouble."

In addition to climate change, Dr. Davis said problems like overfishing and oil spills threatened these flightless birds. Penguins' best hope for overcoming these many obstacles, scientists say, may be their abundant adorability and the protection and money it can bring.

One typically thinks of penguins as waddling about atop miles of featureless ice, but many of the penguins at greatest risk are those species that have strayed farthest from the South Pole.

The endangered Galápagos penguin, a tropical species, is also one of the rarest. Found only on the Galápagos islands off Ecuador, these birds have been hard hit by rising temperatures. Dr. Boersma and others studying the penguins have found that the warmer the waters, the more the birds struggle to find food and to breed. In the warmest years, birds can fail to breed altogether and large numbers of adults can die of starvation.

Two other South American penguin species, the Magellanic and Humboldt, also suffer as waters warm. Since 1987, the number of Magellanic penguins at Punta Tombo has declined by 30 percent. It remains the world's largest colony of the species, still numbering in the hundreds of thousands, but, as with other penguins, the downward trend has researchers worried. (See related story in Vol. 2, No. 13, pg. 13 of Polar Times.)

Photo: Courtesy Brian Shoemaker

Gentoo penguins on Danco Island, Antarctica.

"If we get a series of intense El Niños, they're going to disappear," Dr. Patricia Majluf, conservation biologist at Wildlife Conservation Society, said of the colony of Humboldt penguins she studies, whose numbers are also dropping. "We lost half during one bad El Niño and these are very slow breeding birds."

El Niño is a phenomenon that comes and goes every few years in which the waters of the eastern tropical Pacific warm up, a change that can drive fish and other penguin prey far from colonies. The result, scientists find, can range from decreased egg sizes or deaths of chicks to, in a few cases, large-scale deaths of adults.

In cooler La Niña years, colonies can begin to recoup their losses. But in recent decades, the number and intensity of El Niños has increased while La Niñas have declined.

As for Harry and the other dead or missing penguins, researchers now suspect that they succumbed to a biological toxin like a red tide and again, scientists say the evidence points to climate change as the culprit. Such toxic blooms are associated with warming ocean waters.

Dr. Boersma said she got her first inkling that biological toxins might be at work when a freshly dead penguin floated ashore this winter. "It had an empty stomach that looked like it had been washed with acid," she said, adding that otherwise it seemed well fed and healthy. "He looked fine, except that he was dead."

Other die-offs, also suspected to have been caused by biological toxins, have hit penguins elsewhere.

"In 1990, over half the known yellow-eyed penguins died from some mysterious disease," said John Darby, seabird conservationist, now retired from the University of Otago, who has studied these endangered penguins in New Zealand for 22 years. "It was quite extraordinary. They were just dying all over the place, at their nests, on the beaches."

These penguins also looked healthy; Mr. Darby said he and colleagues believed that a biological toxin killed them as well.

Yellow-eyed penguins are unusual in that they require forest for nesting, putting them in proximity to New Zealanders who have logged to make way for farming. In other areas, penguins must compete with growing fishing industries. Oil spills have killed off many penguins and in Peru the endangered Humboldt is at additional risk because it is considered a good meal by people near the colonies.

Even the penguins in remote Antarctica, which tend to be doing better in terms of absolute numbers, can suffer declines when the bitterly cold seas warm.

Dr. Christophe Barbraud and Dr. Henri Weimerskirch, from the National Center for Scientific Research in France, reported in the journal *Nature* last month that warming seas and a decline in sea ice were linked to a 50 percent drop in numbers in a well-studied population of emperor penguins over the last 50 years.

In what may be the best understood of penguin declines, Dr. Wayne Trivelpiece, direc-

(See "Penguins," next page)

PENGUINS *(CONTINUED FROM PAGE 20)*

tor of seabird research for the United States Antarctic Marine Living Resources program, and colleagues have studied Adelie penguins.

What researchers have discovered is that as the seas have warmed in recent decades, the annual formation of winter sea ice no longer reliably extends to its usual reaches north of the South Shetland Islands. Instead, since the middle of the 1970's, this pack ice formed in that region only two years out of every six to eight years.

The pack ice contains a store of frozen diatoms, a critical food source for young crustaceans known as krill, which are the only food of Adelie penguins. Without pack ice in their spawning grounds, the entire generation of new krill dies and the only krill alive are those that survived from the last winter when there was pack ice.

With the pack ice forming less frequently, the krill have declined and penguin numbers have experienced sometimes sharp drops.

But Dr. Trivelpiece said the real problem was that ice had not formed in the krill spawning grounds now for six winters—about as long as most krill can live. Dr. Trivelpiece said that without a winter's ice soon, the last of the aging krill might never have the chance to reproduce before they expired, crashing the krill population and threatening even healthy populations of Adelies now living at the bottom of the world.

"We're really out on the wire right now," Dr. Trivelpiece said. "If we don't get ice this winter or next, the whole house of cards will come down."

But penguins do have a formidable weapon: their extreme cuteness. Money to protect them has flowed in from tourists as well as wealthy benefactors who want to help these tuxedoed charmers. ❑ ***(cb Peter Barretta, Billy-Ace Baker)***

The Emperor's Waddle

***New York Times*, 26 Dec 2000, by Henry Fountain**—A penguin with a full stomach waddles when it walks. But then again, so does a penguin whose stomach is empty. Their famous waddling gait has been thought to be a main reason why the birds are inefficient walkers, using much more energy than other animals of the same weight.

But new research on the largest penguin species, the emperor, shows that all the side-to-side movement actually helps the birds conserve energy. The penguin's real problem is that it has short legs.

Researchers at the University of California at Berkeley tested several emperor penguins and found that the waddling motion acts like an upside-down pendulum, retaining a lot of energy in each back-and-forth cycle. The rocking motion also raises the bird's center of mass, making things easier on the muscles.

But those muscles do have a hard time because of the penguin's short legs. Given a short-legged and a long-legged animal moving at the same speed, the short-legged one is in contact with the ground for less time. Therefore, its muscles must work more quickly. And fast muscles are less efficient than slower ones. ❑ ***(cb Peter Barretta)***

Decline of the Emperor

***New York Times*, 15 May 2001, by Henry Fountain**—French scientists studying 50 years of population data from an emperor penguin colony in Antarctica found that the population had declined by half because adult survival rates decreased in the 1970's. And the researchers have tied the decrease in survival to rising winter temperatures.

The colony, near the French Antarctic station, Dumont d'Urville, has been monitored continuously since 1952. Until the 1970's, winter temperatures were relatively stable. Then they started to vary, and the average temperature increased by about 4.5° Fahrenheit (but it was still very cold, averaging about 5 degrees above zero). Temperatures have since fallen.

Along with the warming trend came a sharp decrease in the breeding population, from about 6,000 breeding pairs to about 3,000. Since the early 1980's the population has stabilized, and is now between about 2,000 and 3,000 pairs in any given year.

The researchers, writing in *Nature*, say the quick decline may in part have been due to decreasing availability of krill, one of the penguins' staple foods. Warmer temperatures mean less sea ice, and krill eat the plankton associated with the ice. So less ice means less plankton, which means less krill, which means fewer penguins. ❑ ***(cb Peter Barretta Jr. and Abel Shafer)***

The Slandered Penguin

***New York Times*, 6 Feb 2001, by Henry Fountain**—Chalk up another victory for scientific research over silly rumor: Penguins do not fall over backward when they watch an airplane flying overhead.

Reports of penguin-tipping apparently date from the Falklands war between Britain and Argentina in 1982. Many penguin experts had thought that the reports must be some Royal Air Force pilots' idea of a joke. It took a researcher with the British Antarctic Survey, studying the broader problem of the effect of increased air traffic on wildlife, to settle the matter.

The researcher studied king penguins on South Georgia, observing birds' reactions when helicopters flew overhead. The birds stopped calling to one another and some started walking to try to get away from the noise. But no birds fell over. ❑ ***(cb Peter Barretta)***

The King's Doggie Bag

***New York Times*, 26 December 2000, by Henry Fountain**—After stuffing yourself in a restaurant, what could be nicer than to bring home a doggie bag for the rest of the family?

That is exactly what male king penguins must be thinking. Only in their case, the doggie bag is their stomach.

French researchers who studied king penguins on the Crozet Archipelago in the southern Indian Ocean have found that males preserve food in their stomachs for up to three weeks in order to feed it to newly hatched chicks. They reported their findings in the journal *Nature*.

Male and female penguins take turns incubating the egg on their nest, and whichever is not nesting is out on the ocean, foraging for fish and squid. The researchers found that if males returned to the nest from three weeks before to 10 days after hatching, they came with a full stomach, enough food to feed the chick for about 10 days in the event the female did not return in time from her foraging trip. Males returning well before or well after hatching returned empty-stomached.

The males fasted while they were waiting to see if the females returned in time, losing about five ounces of weight daily. But the amount of food in their stomachs remained essentially the same. The researchers suggest that storing food in this way is an adaptation to the highly variable food supply in the region, which can make some foraging trips take far longer than others. ❑ ***(cb Peter Barretta)***

OBITUARIES

Ian M. Whillans

Glaciologist Ian M. Whillians, aged 57, died on May 9, 2001. A professor in the Department of Geological Sciences at The Ohio State University and a member of the Byrd Polar Research Center, Dr. Whillans led numerous scientific expeditions to Antarctica and Greenland. He earned a BSc from the University of Bristol, U.K., in 1966 and a Ph.D. in Geology and Mineralogy from The Ohio State University in 1975. Dr. Whillians was the author of numerous publications in glaciology and the recipient of many professional honors, including the Goldthwait Medal from the Byrd Polar Research Center at the Ohio State University. He is survived by his wife, Emily Whillians, and his children, Andrew and Claire. Friends may contribute in his memory to St. Agatha School, 1880 Northam Rd, Columbus, OH 43221—***Columbus Dispatch*, 11 May 2001** ❑ *(cb Peter Anderson)*

Roger Caras Antarctic Author

Roger Caras, an author, broadcast journalist and devoted champion of animals, died on February 18, 2001 of complications from a heart attack near his farm in Freeland, Md. He was 72.

Caras was president emeritus of the American Society for Prevention of Cruelty to Animals and the longtime announcer at the Westminster Kennel Club's annual dog show. He wrote more than 60 books about animals in their natural habitats. His first, "Antarctica: Land of Frozen Time," was published in 1962—**New York (AP)** ❑ *(cb Billy-Ace Baker)*

Kay Lorraine Lindsay 1941-2001

Kay Lorraine Lindsay was born in Tamsworth, New South Wales, the eldest of three children of Susan Errol Chafey and a descendent of one of Tamsworth's best known pioneering families. She attended the University of New England, where she completed a BS, with honors in zoology. After a year in the Quarantine Service, she married her husband, John, in 1964 and later that year joined him at Ohio State University in Columbus, Ohio. Kay spent much of the following 20 years in the U.S. with her husband and, in the interim, completed an MS at Ohio State and later a PhD at Latrobe Universary, both degrees being in entomology.

At Ohio State in 1969, Kay joined the U.S. Antarctic Program as part of Operation Deep Freeze and, along with four others, became the first woman to set foot at the geographic South Pole. The party was flown to the pole from McMurdo Sound aboard a U.S. Navy Hercules ski-equipped aircraft. In a diplomatic gesture, the admiral had the rear door of the aircraft lowered and all five women linked arms and jumped together, all becoming the first women to the pole.

In 1984, following the birth of her son Mathew, Kay and family returned to Australia. After Mathew was older, she returned to the Quarantine Service, where she dedicated herself to protecting Australia's environment from incoming insect pests.

She died on 21April after a valiant struggle with cancer. ❑ *(cb Cliff Bekkedahl)*

Captain Charles Borgstrom

We received word just prior to close out of this edition of Polar Times *that Captain Charles Borgstrom passed away on Monday, 2 July 2001.*

Friends and shipmates from both Operation Deep Freeze days and the Navy's helicopter community are mourning the loss of Captain Charles "Charlie" Borgstrom. "Helo King" in VXE-6 in the late sixties, Charlie later became the Commanding Officer of the Sea Wolves, the helicopter attack squadron in Viet Nam. Under his leadership and that of his predecessors, the Sea Wolves became the most highly decorated air combat squadron in Viet Nam, compiling a combat record that exceeded even the jet squadrons that flew off carriers in the South China Sea. All pilots and crew who served with him on the Ice or in the hostile air over Viet Nam will hold his memory with deep respect and affection.

Captain Borgstrom was interred at the Military Cemetery at Otis Air Force Base, Cape Cod Massachusetts.

He is survived by his wife and four daughters, and condolences will reach them c/o Mrs. Betty Borgstrom ,316 Coldway Drive [Unit D-25], Punta Gorda , Florida,33950. ❑

Book Reviews

The Antarctic Dictionary: A Complete Guide to Antarctic English

By Bernadette Hince
CSIRO Publishing/Museum of Victoria (Australia), 404 pages, $21.50.

Review by Jeff Rubin
18 Feb 2001, *Chicago Tribune*

The Ice Continent has found its own Samuel Johnson in Bernadette Hince, a lexicographer who has meticulously documented the unique brand of English used by Americans, Australians, Britons, New Zealanders and South Africans working in Antarctica.

Citing more than 15,000 quotations from 1,000 sources, Hince shares her delight in this colorful branch of our language. "Tin dogs," we learn, are snowmobiles; "slots" are crevasses; "herbies" are blizzards; "beakers" are scientists; "big eye" is insomnia attributed to changes in the length of daylight in the Antarctic; and "greenout" is the overwhelming sensation induced by smelling and seeing trees and other plants upon returning home from Antarctica.

Another interesting gem: the tea bag, originally made of cloth, was invented by Antarctic explorers as a weight-saving device while out on the polar trail. ❑

Coming Events

YEAR 2001

27 August-1 Sept (Amsterdam, The Netherlands) • VIII SCAR Biology Symposium (Session on "Antarctic research, human impacts and environmental policy"). **Contact:** vu_conference@dienst.vu.hl

September [date to be announced] **(Brittany, France)** • Second International Exhibition for Polar Philately. **Contact:** philex.pole@laposte.net

12-16 November 2001 (Wilton Park, U.K.) • "40 Years On: The Antarctic Treaty System in the 21st Century." *Participation by invitation only.*

YEAR 2002

30 January 2001 (King George Island, Antarctica) • Fifth Antarctic Marathon and Half Marathon. ***Contact:*** marathon@shore.net (Thom Gilligan)

8-19 July (Shanghai, China) • XXVII SCAR (Scientific Committee for Antarctic Research)

July [date/location to be announced] **(Europe)** • IAATO Year 2002 Annual Meeting. *Invitation required.* ***Contact:*** iaato@iaato.org (Denise Landau)

OUR BACK COVER: ***A sun pillar forms as the sun rises over the north slope of Alaska in January 1951.*** **(Photo courtesy of RADM Harley Nygren NOAA [Ret.])**

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The Race to the White Continent: Voyages to the Antarctic

By Alan Gurney
Norton, 320 pages, $26.95

Review by Jeff Rubin
10 Nov 2000, *Chicago Tribune*

The middle period of the exploration of Antarctica—between the voyages of Capt. James Cook and the well-known "race to the South Pole"—has until recently been neglected in the continent's popular history. Authors have focused instead on the deadly competition between Roald Amundsen and Robert F. Scott, as well as the heroic survival story of Sir Ernest Shackleton's Endurance expedition.

But during the two years from September 1837 to September 1839, three competing expeditions set out from France, the U.S. and Britain, each with the goal of discovering whether a continent did indeed exist at the bottom of the globe. Cook had surmised that a large body of land, perhaps even a continent, lay behind the veil of pack ice, but he was never able to find it.

The account of these rival national expeditions at the dawn of Antarctica's history is an absorbing tale, and in "The Race to the White Continent," Alan Gurney, a former yacht designer, tells it well.

But "The Race to the White Continent" at times leaves the regrettable impression that it was too-hastily produced. Nearly two dozen proofreading slips tarnish the text, and two of the notes numbered in the text are never explained. There are a few factual errors: The coasts of Australia are switched in the description of one surveying voyage; the direction a ship sailed from the Antarctic Peninsula to Deception Island is reversed; the name of New Zealand's present-day Antarctic base is incorrect.

Another disappointment: The book lacks acknowledgement of the many passages for which the author owes an often-considerable debt to one or another of his 161 bibliographical sources. Occasional footnotes need not have unduly interrupted Gurney's absorbing narrative.❑

The Other Side of Eden

by Hugh Brody
Illustrated. 376 pages. North Point Press. $25

Review by Richard Bernstein
9 May 2001, *New York Times*

Hugh Brody, an anthropologist, writer and documentary filmmaker, begins his new book, *The Other Side of Eden*, with a recollection of a hunt in the vast darkness of the Arctic night. He was traveling by dog team with an Inuit friend, Paulussie Inukuluk, and at a certain point, with Mr. Inukuluk and the dogs just blurs on a featureless horizon, Mr. Brody experienced "an unbelievable magnificence that filled me with awe, disbelief, and at the edge of my mind, real fear."

Some 300 pages later Mr. Brody sums up what he has learned about several of the peoples who live on the edges of what most of us would narrowly conceive of as civilization. His journeys to the zones of northern Canada, where farming is impossible and people live by hunting and gathering, put him into contact with "a very different kind of human condition." The immense landscapes to which a lifetime of research have brought him "were matched by human beings who seemed to be free and at home."

Among the many virtues of Mr. Brody's ambitious and learned (but also rambling and, in places, unfocused) account of his life among the indigenous tribes of the far North is the vivid window it opens on that kind of human condition. Mr. Brody's book is eye-opening, providing a startlingly intimate portrait of a physical and human world that few non-hunter-gatherers will ever experience.

It obliterates the stereotype of the far northern peoples as representatives of a quaint, icy sort of simplicity and backwardness and replaces it with a fully human richness and complexity. The region that exists in the mind of most North Americans as a forbidding emptiness becomes a domain full of meaning and beauty in Mr. Brody's treatment of the people who live in it.

Beyond those things, Mr. Brody's book is at once a portrait of several indigenous peoples and a reasonable plea for their battered rights. In his interesting vision, the world consists of two basic human types: hunter-gatherers and farmers. Their mutual lack of understanding, their different mental and spiritual worlds, their inevitable economic incompatibility—all lucidly explained in Mr. Brody's book—explain the basic pattern of human history.

Mr. Brody—who has been living among the various northern peoples for more than 30 years—often simply recounts his experiences. But underlying Mr. Brody's introduction of the northern peoples and cultures—and underlying as well his melancholy accounts of the mistreatment of the northern indigenous peoples by immigrants from Europe—is the larger historical theme. The Book of Genesis serves in this sense as an archetype of one way of life. Genesis' central ingredient is the expulsion from Eden and the consequent need to work the land. The world of hunter-gatherers, by contrast, entertains no notion of an expulsion but rather a sense of permanent occupancy on land that has always been connected with a particular people

But the most basic and pervasive pattern of history is one in which agricultural civilization spread into the territories of the hunter-gatherers, seized the land and in many instances annihilated the indigenous peoples. This is what happened in much of North America, but in Mr. Brody's expansive historical view it also happened in Europe and in Asia, though much earlier.

"All this suggests that the conquest of hunter-gatherers by farmers in the Old World may not have been all that different from the advance of European agricultural frontiers in the New World," he writes. Farmers, with their growing populations and their need for ever more land, were the true nomads of history, consigned always to seek and settle new territories. "Hunter-gatherers, with their reliance on a single area, are profoundly settled," Mr. Brody writes. "As a system, over time, it is farming, not hunting, that generates 'nomadism.'"

Having made that fascinating point, he spends much of the rest of his book pleading for the rights of indigenous peoples and describing the nature of the colonialist depredations they have suffered. In much of this, Mr. Brody's writing has a drifting, segmented, uncrisp quality that leaves the reader wondering here and there what exactly the point is. But his general idea is clear enough: the various stages of occupation of the indigenous peoples robed them of their languages, their culture, the very sense that they possessed human intelligence.

In places, angry and sometimes stylistically flawed and thematically jumbled, *The Other Side of Eden* nonetheless is an informed, passionate and enlightening volume, one that draws on an exceedingly rich experience and adds new dimensions to our understanding of the diversity of human life. ❑ ***(cb Abel Shafer)***